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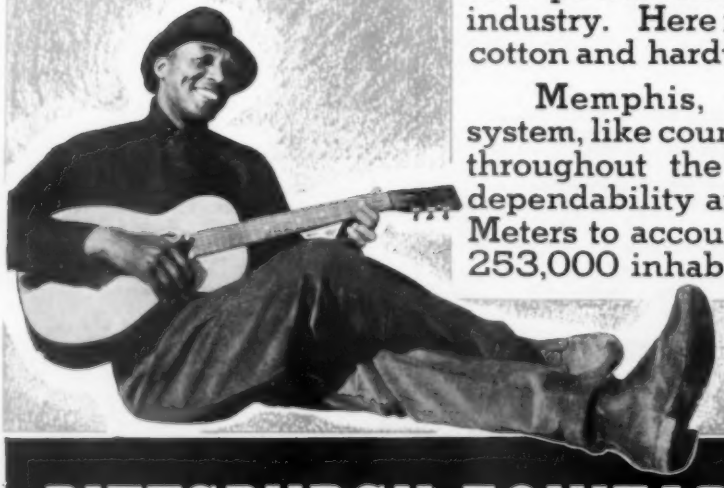

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How PWA and WPA Projects Differ

Statement Approved by President Roosevelt, July 2

IN order to assure the expeditious and orderly handling of the great number of applications of states, territories, possessions, including subdivisions and agencies thereof, municipalities, the District of Columbia, and public bodies, now being submitted under the Emergency Relief Appropriation Act of 1935, and in order to further the development of a balanced program of sound projects which will take a maximum number of workers off the relief rolls, it is desirable to define what types of projects shall be within the jurisdiction of the Federal Emergency Administration of Public Works and what types of projects shall be within the jurisdiction of the Works Progress Administration.

Applications shall be submitted to the *Federal Emergency Administration of Public Works* for:

(1) *Works Projects*: Construction projects (other than repair and maintenance projects, and other projects directed in this statement to be submitted to the Works Progress Administration) where the aggregate cost upon completion is estimated to be more than $25,000.

Examples of such projects are: airport buildings, armories, almshouses, auditoriums, bulkheads, canals, docks, dormitories, schools and university buildings, electric heat, light and power plants and distribution systems, gas plants and distribution systems, jetties, piers, wharves, highways, bridges, tunnels, subways, viaducts, hospitals bridges, sanitariums, markets, warehouses, city and town halls, court houses, fire and police stations, jails, libraries, sanitary sewer systems, drainage improvements, garbage and rubbish disposal plants, public buildings, sewage-disposal plants, storm-sewer systems, terminals, water-supply and distribution systems, filtration plants, and other similar projects.

(2) *Slum Clearance and Low-Cost Housing Projects*: Projects of a type heretofore carried on by the Housing Division of the Federal Emergency Administration of Public Works.

Applications shall be submitted to the *Works Progress Administration* for:

(1) *Non-construction Projects*: Projects of a type designed to assure maximum employment principally to professional, clerical and white collar classes.

(2) *Small Works Projects*: Projects of any type where the aggregate cost upon completion is estimated to be $25,000 or less.

(3) *Other Works Projects*: All other projects, regardless of cost, except those referred to in Part II above. Examples of such projects are: recreational facilities, parks, playgrounds, small dams, ditches, street repairs, demolition, malaria control, pest extermination, airports, sidewalks, gutters and curbs, levee work, landscaping, grading, farm to market roads, reservoirs, swimming pools and similar projects.

Applications rejected by the Federal Emergency Administration of Public Works shall be submitted immediately to the Works Progress Administration.

All applications for loans shall be submitted to the Federal Emergency Administration of Public Works.

This statement shall not govern applications involving projects within the jurisdiction of any other Federal agency.

(Signed) HAROLD L. ICKES,
Federal Emergency Administrator of Public Wks.
HARRY L. HOPKINS,
Works Progress Administrator.
FRANK C. WALKER,
Executive Director, National Emergency Council.

New Regulations Governing PWA Projects

ANNOUNCEMENT of regulations governing PWA's participation in the $4,000,000,000 works program under the Emergency Relief Appropriation Act of 1935 was made on July 15 by Public Works Administrator Harold L. Ickes. The new rules are definitely in the interest of expedition and are in line with the President's injunction that "speed is of the essence."

The new rates for labor on Public Works projects, which the President exempted from the WPA rates recently promulgated, are to be determined as follows:

"Minimum or other wage rates required to be predetermined by state law or local ordinance shall be predetermined in accordance therewith, and incorporated in the appropriate contract documents. In the absence of applicable law or ordinance, the applicant shall predetermine minimum wage rates, in accordance with customary local rates, for all the trades and occupations to be employed on the project, and submit such rates to the State Director for approval before incorporating them in the appropriate contract documents.

"If, in the opinion of the State Director, work of any specific type has generally been done under union conditions in the political subdivision in which the project is to be constructed, the State Director may disapprove any rate to be paid on such type of work, other than a rate predetermined under law or ordinance, if it is less than the present prevailing union rate."

The new regulations provide that any time after acceptance by the applicant of an offer by the Government to aid in financing a PWA project, the applicant may request an advance payment on account of the grant of not exceeding 15 per cent of the previously approved estimated cost of the project.

This advance grant may be used for paying architectural, engineering, planning and legal fees, costs of surveys, borings and other preliminary investigations, costs of preparation of plans, specifications and other forms of proposed contract documents, the costs of advertisements for bids for contracts and the printing of bonds, but not in payment for the acquisition of lands, easements, or rights-of-way. The request for this advance grant must be accompanied by a signed certificate of purposes.

Workers will be obtained through the U. S. Employment Service, preference being given to persons from the public relief rolls. Unless authorized by WPA, at least 90 per cent of the persons employed on any project shall be taken from relief rolls. The contractor may bring supervisory and administrative employees and key men on the job up to 10 per cent of all employed; and may dismiss any employee not qualified for the work for which he has been referred.

The maximum hours of manual work on PWA projects are to be 8 per day and 130 per month, though in some cases a 40-hour week will be permitted. Wherever practicable, double shifts of labor will speed construction and spread employment.

Works Progress Administrators Appointed

THE Federal Emergency Relief Administration reported on July 19 that all the Works Progress Administrators had been appointed, with the exception of those for the territories and the state of Maine. The list of names and addresses as of that date follows:

Ala., Thad Holt, First Nat'l Bank Bldg, Montgomery.
Ariz., W. J. Jamieson, Heard Bldg., Phoenix.
Ark., W. R. Dyess, Old P. O. Bldg., Little Rock.
Calif., Frank Y. McLaughlin, 49 Fourth St., San Francisco.
Colo., Paul D. Shriver, Johnson Bldg., Denver.
Conn., Matthew J. Daly, 121 Munson St., New Haven.
Del., Bankson T. Holcomb, Del. Trust Bldg., Wilmington.
Fla., C. B. Treadway, Exchange Bldg., Jacksonville.
Ga., Miss G. B. Shepperson, Forsythe St. Bldg., Atlanta.
Idaho, J. L. Hood, Boise City Nat'l Bldg., Boise.
Ill., Robert J. Dunham, 1319 S. Mich. Ave., Chicago.
Indiana, Wayne Coy, 217 N. Senate St., Indianapolis.
Iowa, L. S. Hill, Works Progress Administration, Des Moines.
Kans., Evan Griffith, Nat'l Reserve Bldg., Topeka.
Ky., George H. Goodman, 9th and Broadway, Louisville.
La., Frank H. Peterman, Canal Bank Bldg., New Orleans.
Md., John N. Mackall, 3104 Baltimore Trust Bldg., Baltimore.
Mass., Arthur G. Rotch, 49 Federal St., Boston.
Mich., Harry L. Pierson, 609 City Nat'l Bldg., Lansing.
Minn., Victor Christgau, Minnesota Bldg., St. Paul.
Miss., Wayne Alliston, Tower Bldg., Jackson.
Mo., Matthew S. Murray, State Capitol Bldg., Jefferson City.
Mont., Ray Hart, First Nat'l Bank Bldg., Helena.
Nebr., D. F. Felton, Terminal Bldg., Lincoln.
Nev., Frank Upman, Jr., 303 S. Center St., Reno.
N. H., Wm. P. Fahey, Silver & Lincoln St., Manchester.
N. J., Wm. H. J. Ely, 1060 Broad St., Newark.
N. M., Lea Rowland, Works Progress Administration, Santa Fe.
N. Y. State, Lester W. Herzog, Old P. O. Bldg., Albany.
N. Y. City, General Hugh S. Johnson, Port Authority Bldg.
N. C., G. W. Coan, Jr., Commercial Nat'l Bank Bldg., Raleigh.
N. D., Thomas H. Moodie, Works Progress Administration, Bismarck.
Ohio, Charles C. Stillman, Pure Oil Bldg., Columbus.
Okla., Col. W. S. Key, 431 W. Main St., Oklahoma City.
Ore., E. J. Griffith, Park Bldg., Portland.
Pa., Edward N. Jones, Farm Show Bldg., Harrisburg.
R. I., J. Burleigh Cheney, 205 Benefit St., Providence.
S. C., L. M. Pinckney, Loan and Exchange Bldg., Columbia.
S. D., M. A. Kennedy, Pierre.
Tenn., Col. Harry S. Berry, Stahlman Bldg., Nashville.
Texas, H. P. Drought, Smith Young Tower Bldg., San Antonio.
Utah, D. J. Greenwell, State Capitol, Salt Lake City.
Vt., Harry W. Witters, State Capitol, Montpelier.
Va., Wm. A. Smith, 11 S. 12th St., Richmond.
Wash., George H. Gannon, 1011 Alaska Bldg., Seattle.
W. Va., F. W. McCullough, Kanawha Valley Bldg., Charleston.
Wis., Gen. Ralph M. Immell, 149 Wilson St., Madison.
Wyo., Will G. Metz, 300 21st St., Cheyenne.
D. of C., George E. Allen, District Bldg.

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Governmental Division, Burroughs Adding Machine Company
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Purchase and Payment Records ☐ Revenue and Expense Distribution ☐ School Board Accounting ☐
Municipal Utility Accounting ☐ Institutional Accounting ☐

Name_____ Title or Position_____

Address_____

Why not remember to mention THE AMERICAN CITY?

Our Municipal Notebook

Whose Fault?

AT midnight of an icy night last February a mechanic was driving home from a night job, when he observed, without particular interest, a truck standing by the roadside and a man waving a red lantern. He pulled to the left to pass, but was halted by a state policeman. "Gimme your name and address and show me your license. When you see a red lantern, that means stop," and the trooper administered a severe rebuke. The mechanic drove away with a sense of injury and considerable nervousness. It was late, there were highwaymen in the world, the pavement was slippery. Why should he have stopped, when he could accomplish nothing except get a bawling-out? Fifteen minutes later he saw a very old passenger car parked under a light on a curve where there were signs prohibiting parking, and somebody waving a flashlight. He wavered, tried to stop, skidded across the road and crashed into the rear bumper, injuring a woman who was standing behind the parked car. The upshot of this was that he borrowed enough money to settle out of court. What's the answer? Should the state trooper have been courteous or the mechanic more hardboiled? On a still more recent occasion, a driver mistaking an exit road for the feeder to a parkway was overhauled and politely given a ticket. Which is more conducive to careful driving—a bawling-out without a ticket, or exquisite courtesy with a ticket? Few persons will hesitate at that question.

"No Taxes, Eh?"

UNDER the above caption a Western engineer sends these remarks from the *Sacramento Bee*:

"Almost half a million dollars of direct relief money will be supplied Los Angeles citizens in the next fiscal year out of revenues of the city-owned light and power system. The exact amount is $485,000, which, together with $765,000 to pay light and power bills of city departments and $794,000 for water services to the same, makes a total of $2,044,000 the municipal utility will furnish toward balancing the city's budget. . . . At a tax rate of $3 per $100 valuation, the contribution Los Angeles utilities will make to the city treasury this coming year amounts to a tax on $68,133,333 worth of property."

Progress proceeds by little flashes that give progressive glimpses of what might be. The essentially social character of electricity has been recognized, and little by little is being put into words that carry understanding to all classes of citizens. During the last few years, Canada with Hydro and the Federal Government with TVA have driven into the private power field deep salients that are now under heavy attack. These salients are vulnerable and may be flattened out. Even so, they would be remembered not for their weaknesses, except as these will be lessons for the future, but for what they were intended to accomplish. And some day the social power line will move forward again, and the Federal Government will generate and the municipalities will distribute, and much painless and respectable revenue will be derived thereby. That, says our Western friend, plus huge savings to consumers in low rates for utility services.

Mending

TOOLS skillfully welded can make things, and when these things are old can remake them so that they will last a while longer. Shrewd operation, however, consists in maintaining latest models at maximum efficiency, rather than in rebuilding worn-out machines largely for the satisfaction of seeing them go. It is astonishing to what trouble some municipalities will go with blow-torch and miscellaneous parts to keep battered wheels turning. A new machine costs money, but should it get into trouble, its maker is in trouble too and must make good. But when an excessively repaired machine stops, nobody is surprised and its nurse is likely to be complimented for ever having made it go.

Linen Hose

THE outstanding advantage of linen hose is that it is easy to handle and carry and occupies comparatively small space. It will leak at first until the water swells the fibers and closes the interstices, and it will mildew unless properly treated in manufacture. The National Board of Fire Underwriters calls attention to the fact that this hose has a friction loss 2½ times that of woven-cotton rubber-lined hose, and that therefore to get the same effect 3-inch linen should be used where 2½-inch cotton-rubber would serve. The performance of these two sizes of the two types of hose will be closely comparable. Using 500 feet of either, a 500- to 750-gallon engine will develop about 137 pounds with a 1⅛-inch nozzle and serve two lines. Linen hose is not a novelty. It is standard practice in Europe where smaller buildings well-constructed, and without open elevators and stairways, do not demand the powerful streams common in large American cities. Over here, linen hose is installed for first fire-aid within buildings. There is a possibility of making use of linen hose for emergency purposes, because if kept dry it can be stored for years.

Inter-City Cooperation

WHO can cite instances of unusual types of municipal cooperation? The Essex County (N. J.) Municipal Conference, organized to bring about economy, coordination and cooperation among municipalities, asks information on all services that can be performed more cheaply by a group of towns than is possible individually. One thinks at once of the cooperation between fire departments and police-radio departments, and of sanitary districts, but so of course has the Conference. Address P. A. Smith, Executive Secretary, East Orange, N. J., who says: "I like to see taxpayers being able to have intimate contacts with officials, and yet have the advantage of large-scale operation. We are most interested in following up unusual cases of cooperation, and I am preparing a list of matters that will be cared for shortly by Essex County. I shall be glad to send this to any one who is likewise interested." Essex County is in the nature of a metropolitan area, crowded with cities, Newark the largest.

"Average" Florida City

PARTLY to confound a charge of overseriousness, the *Florida Municipal Record* has averaged some statistical facts of 63 towns of 214 to 31,579 population. Average City is shown to have:

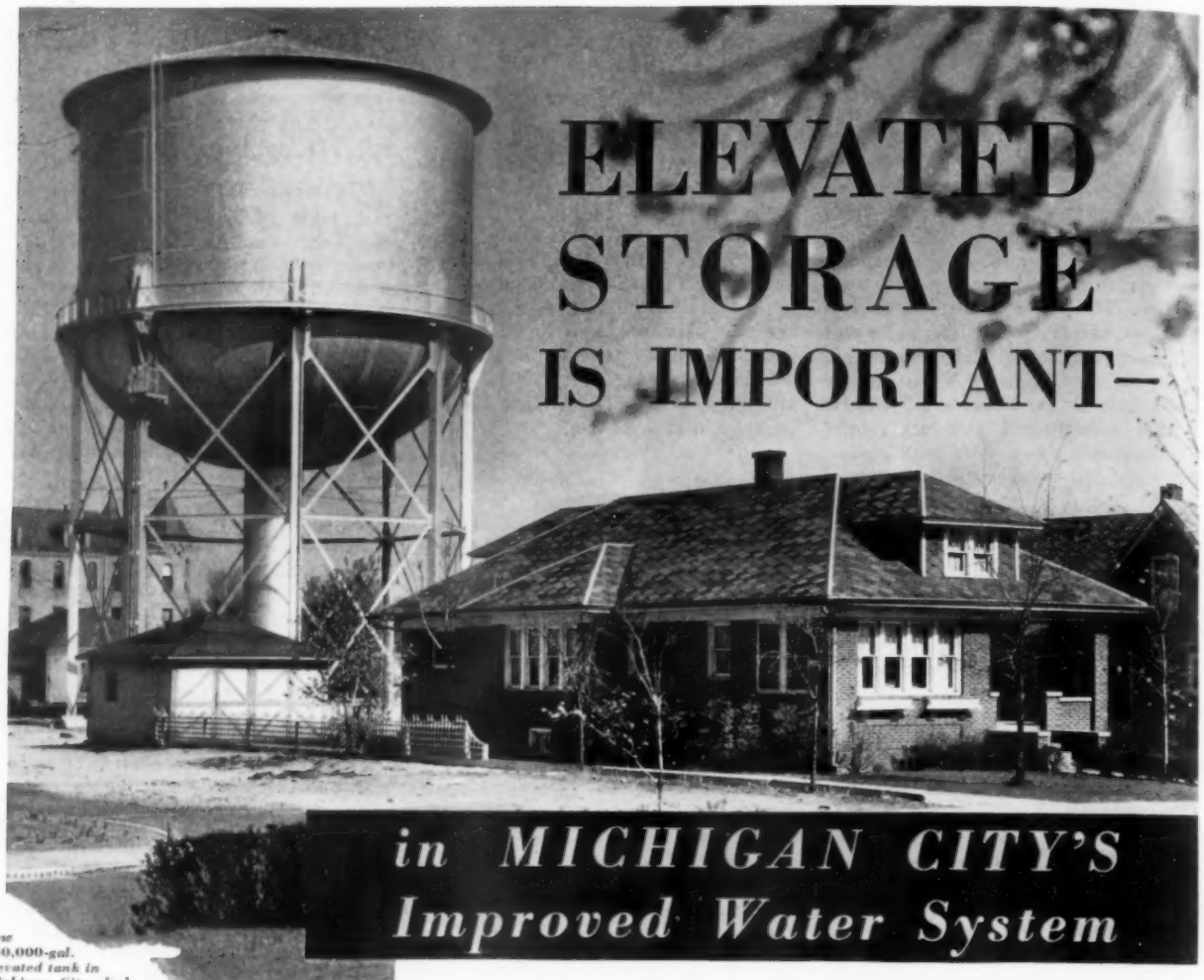
Population	4,342
Pieces fire apparatus	2.04
Acres of parks	16.8
Municipally owned trucks and cars	8.3
Water mains, miles	20.0
Fraction of a municipally owned water plant	5/6
Municipally owned tennis court	1.0
Children's playground	1.0

True to the habits of averages, it is said that no actual city in Florida resembles the average. Let us hear from Arcadia, Leesburg and Fort Pierce, with populations between four and five thousand and averaging 4,333—are they equipped over or under the average? Further, it may be noted that the municipalities of Florida average 1/95-police radio and 1/12-municipal electric plant.

Your City

By the flow and rush of the water
That swells in the placid mains,
And the slip of the pearl-gray sewage
In the deep dank underdrains;
By the cold dumb power in the cables,
That transcends the thought of man;
By the colored eyes of the traffic
And the clang of a garbage can;
By the judge's crash of a gavel
And fire trucks' shrieks night and day;
By these you shall know your city
And its use of the taxes you pay.

ALDEN W. WELCH.



ELEVATED STORAGE IS IMPORTANT—

in MICHIGAN CITY'S Improved Water System

New 750,000-gal. elevated tank in Michigan City, Ind.

100,000-gal. wash water tank at Michigan City's new filtration plant

EXTENSIVE additions to existing water facilities will, when completed, give Michigan City a water system that will be the envy of cities of comparative size. A new and modern treating and filtration plant, additional pumping equipment and adequate elevated storage assure its citizens an ample water supply of excellent quality.

Two new elevated tanks are included in these extensive additions, and play important parts in the operation of the system.

One, of 750,000-gal. capacity, together with the clear water storage reservoir, provides the necessary storage to balance the uniform filtration rate with the fluctuating demand and permits substantially uniform and economical pump operation. A smaller tank of 100,000 gal. is used for the storage of wash water for the filtration beds.

This is another example of how engineers utilize the advantages of adequate elevated storage in municipal water systems. We shall be glad to supply engineering data and cooperate in other ways with city officials contemplating the erection of tanks of any size. Please write our nearest office.

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Cleveland	2236 Rockefeller Bldg.	Birmingham	1502 N. Fiftieth Street	Tulsa	1625 Thompson Bldg.
Detroit	1501 Lafayette Bldg.	Dallas	1406 Dallas Athletic Club Bldg.	Los Angeles	1403 Wm. Fox Bldg.

Fabricating Plants in Chicago, Birmingham, and Greenville, Pa.

Hard Water—Reservoir Roofs—Water-Main Cleaning

Soap Losses from Hard Water Determined Experimentally

THE amount of soap consumed and the quantity of water used for household processes, laundering, dish-washing, cleaning, washbowl activities, and bathing, was carefully measured for a period of one week, and calculated for a year, by Pauline Snyder at Ohio State University for a thesis presented for the degree of Master of Science in 1927. Two kinds of water were used, each for one week:

1. Scioto River water, which was filtered and sterilized but not softened. The hardness was 270 parts per million, 16 grains per gallon. It was delivered in 10-gallon bottles to the home where the experiments were made.

2. Softened water as delivered to consumers. The hardness averaged about 80 parts per million, 4.7 grains per gallon. In the home where the experiments were made there were five people, three adults and two children. Ivory soap in bar and flake form was used, the former costing 21 cents per pound and the latter 31 cents. The laundering was done in a vacuum type electric washer, the weight of the clothes averaging 29 pounds per washing.

Water-works records show that this family used the average quantity of water, about 30 gallons per day per capita. Their bill amounted to 75 cents per month. The soap was dried and weighed before and after it was used, so that the difference in weight would represent the weight actually used. The The results for the week figured to one year show:

1. That this family used 281 gallons of water a week for ordinary household cleaning, divided as follows: laundry, 15 gallons; dish-washing, 73 gallons; cleaning, 4 gallons; bathing, 136 gallons; and washing of hands, 53 gallons.

2. That approximately 11.46 pounds of soap were used per week with unsoftened water, or a total of 596 pounds per year.

3. That approximately 3.7 pounds of soap were used per week with Columbus city-softened water, or a total of 192.5 pounds per year.

4. That softened water saved this family 403.5 pounds of soap per year.

5. That this soap, valued at 20 cents per pound, represented a saving of $80.70 per year, and figured at 12 cents a pound, the price of cheaper laundry soaps, represented a saving of $48.42.

6. That this consumer could afford to pay five or six times as much for softened as for unsoftened water.

The investigation also disclosed the following facts: 1. One-half again as much time was needed to launder clothes in the unsoftened as with the softened water. 2. The cleanliness of clothes washed in the unsoftened water was not entirely satisfactory. Several very soiled pieces had to be re-washed and all the clothes had to be re-rinsed. 3. The general appearance was unsatisfactory.

These figures may be high for the average family, but they are fairly representative for a family of five living in moderate circumstances. There are 55,033 domestic services or consumers in Columbus, Ohio. Applying the above figures, if each one saves $48.42, the total saving would amount to $2,664,497.86. If this figure is divided by 2 because of the possible use of cheaper compounds to "break" the water, the saving would be $1,332,348.93. This amount is about eight or ten times the cost of chemical softening.

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Creosoted Wood for Reservoir Roofs

DURING the summer of 1934, the Pasadena Water Department completed construction of its fourth creosoted timber reservoir roof. It is the general practice in southern California to build such covers to keep the sunlight out, thereby preventing the growth of algae. When this is the sole purpose of the cover, no effort is made to have it watertight. In fact, open spaces are often left between the boards to permit of better ventilation and to reduce uplift in case of wind storms. In other instances the covers are made to shed water and keep out dust and dirt, and in these cases the sheathing is of shiplap or tongue-and-groove stock, covered with a composition roofing.

Wood construction has been used for practically all these covers, but only in recent years has pressure-creosoted lumber been adopted. There have been many instances of very short service life from untreated timber, particularly where ventilation has not been given proper consideration. The termite hazard is not severe in this type of structure, although termites have been found in some instances. They are a potential hazard, however, and protection against them has been one of the reasons for the increasing use of creosoted lumber.

Pasadena has adopted a standard reservoir roof design consisting of creosoted Douglas fir timber, covered with 24-gage galvanized corrugated steel sheets, to make the roof water-tight and practically dust-proof. Such a new roof was built on Sunset Reservoir, Unit No. 2, during the summer of 1934. This reservoir is 260 feet wide, 520 feet long, and 16 feet deep, with a capacity of 9,855,000 gallons. A total of 167,141 board feet of lumber was required for its construction. The girders are 6 x 12-inch and 8 x 12-inch on inside spans, and 4 x 12-inch on outside spans. The joints, bridging, plates and sills are 2 x 8-inch; the bracing, 2 x 8-inch and 2 x 12-inch; and the studs 2 x 6-inch. The posts are dense select all-heart structural redwood 8 x 8-inch on inside location and 6 x 6-inch on outside locations.

The timber was treated with 8 pounds of grade 1 coal-tar creosote per cubic foot, by an empty-cell process in accordance with the standard specifications of the American Wood-Preservers' Association. Before treatment all pieces 2 inches thick were incised, those over 4 inches thick being incised on four sides. The sides and ends of the reservoir were ventilated by placing No. 4 galvanized mesh across the ends of the girders and joists. In addition, a mesh-covered vent 16 inches wide was built along the ridge.

The roof was designed for a live load of 17 pounds per square foot, and was also designed to withstand an earthquake shock based on 1/10 gravity which is carried to anchorage at the sides.

—From an article by Dan L. Lindsley in *Wood Preserving News.*

Results of Water-Main Cleaning at Evansville

A CONTRACT was made with the National Water Main Cleaning Co., of New York City, to clean the mains, at Evansville. The work was started June 20, 1934, on 6,000 feet of 16-inch pipe and was continued until the contract was completed. Under the contract a total of 37,956 feet of 12-, 16- and 20-inch mains were cleaned and practically restored to their original carrying capacities. The results obtained were so satisfactory, that the Water Works Trustees were convinced of the advisability of continuing this excellent work and made a second contract with the same company to clean all mains laid prior to filtration, from 10- to 30-inch, inclusive. The total footage of the second contract was approximately 87,500 feet, and the results obtained were as good as, if not better than, those of the first contract. The Board of Trustees then decided it would be the wise and only thing to do, to clean all pipes laid prior to filtration, and on November 1, 1934, a third contract was made with the same company, for approximately 450,000 feet of 6- and 8-inch pipe.

The results from main cleaning at Evansville were most gratifying. Velocity tests were run on various lines before cleaning, and the drop in pressure noted, as well as the discharge at the hydrants. The same hydrants were used after the mains were cleaned, and when readings were taken the difference showed an increase of 15 to 35 per cent more water. And with only two hydrants discharging 1,000 gallons per minute each, a drop of 2 to 4 lbs. was noted, while before cleaning there was a drop of 6 to 15 lbs.

—Abstract of paper by CHARLES STREITHOF, General Superintendent, Department of Water Works, Evansville, Ind., presented before the Indiana Section of the American Water Works Association.

NEW ROAD PROJECT

BARCO GASoline HAMMER

This actual photograph shows the BARCO cutting down shale during construction of a large catch basin on a new road project in the vicinity of Pittsburgh and on one of the main highways leading north. Material at the bottom of pit was extremely tough and included a large percentage of shale.

The Barco drills, cuts, tamps and drives. A remarkable hammer.

Portable, dependable, effective.

Model H-5 for heavy duty—Model J-1 for light duty.

BARCO MANUFACTURING COMPANY
1803 WINNEMAC AVENUE - CHICAGO, ILLINOIS

Why not remember to mention THE AMERICAN CITY?

Highways and Bridges

Paving and Pavement Guarantees in Buffalo, N. Y.

THERE is a proposal in Buffalo to change the guarantee period in contracts for paving and repaving. In discussing this, the Buffalo Municipal Research Bureau, Inc., has given a statement of the system in use in Buffalo which is of interest.

The city charter provides that specifications for any kind of pavement may be filed with the Commissioner of Public Works and, if approved by him, become the specifications on which bids may be based. If the Commissioner does not approve the specifications, appeal may be made to the Common Council, whose decision is final.

The property owners on any street may file a petition for any one of the pavements the specifications for which have been approved, but if they do not select any particular pavement, the Council is authorized by the charter to select the type of pavement.

On April 16, 1935, the Council formally approved the action of the Commissioner of Public Works in designating as standard a wearing surface of 3½ inches and 3 inches instead of the former 3½ and 2½ inches. While, therefore, other specifications may be offered, only these will be approved, since both the Commissioner and Council agree.

The charter authorizes the Council to fix the "guarantee" term by ordinance. On December 12, 1933, it so fixed the term at ten years. The Council is now considering making the term five years as that within which the contractor shall "maintain the pavement in good repair at his expense."

There is considerable divergence of opinion as to the proper length of the guarantee term. Buffalo requires a bond from the contractor, which adds to his cost, and the extra cost is passed on to the taxpayer, of course. A ten-year bond should be unnecessary. The city pays for a first-class job and it can be sure to get it if it writes proper specifications and properly inspects the job as it progresses. In November, 1927, when the Buffalo Municipal Research Bureau was studying this matter, it found no other large cities requiring a ten-year guarantee, other cities requiring guarantees as follows: five-year guarantee—Detroit, Pittsburgh, Boston, Kansas City, Philadelphia, Washington; three-year guarantee—Milwaukee, Indianapolis; two-year guarantee—Chicago (on private contract), none on special assessment; one-year guarantee—St. Louis; one winter season—Baltimore; none—Springfield, Mass.

On the other hand, it is naturally understood that the ten-year term confines the bidding to firms which are financially strong, since others cannot get a bond for so long a period. It is maintained by some that the property owner gets a better job under a ten-year guarantee, although there is no explanation for this. The additional cost of ten-year over five-year bonds is about 1 per cent of the paving bill. The following table roughly summarizes the items which the contractor puts into paving costs.

	Guarantee	
	5 Years	10 Years
10,000 square yards @ $3.00	$30,000	$30,000
Contractor's bond premium @ $4.00 M	120	120
Mtce. bond premium @ $2.00 M per year	300	600
Maintenance @ 0.03 per sq. yd. per year	1,500	3,000
	$31,920	$33,720

Few Early Roads Wide Enough for Modern Traffic

TRAFFIC has changed radically and increased considerably since 1900, when Lower Merion, Pa., became a township of the first class. In those days it was a truly rural section of about one-third the present population, with most of the travel by horses, and the road system consisted of 120 miles, 50 per cent of which was macadamized.

The automobile replaced the carriage, and later the truck replaced the wagon. Traffic counts were made at a number of locations in 1914, 1921, and 1934. The traffic, or number of vehicles, tripled from 1914 to 1921 and multiplied seven times from 1914 to 1934. The horse vehicle comprised 27 per cent of the traffic in 1914, while in 1924 it had vanished. There are now 127 miles of roads and streets, 89 per cent of which are paved.

Providing adequate traveling facilities is a serious problem. Many of our principal streets opened years ago have a right-of-way of but 28 to 33 feet. To provide within this width an ample roadway, pedestrian ways and space for slopes in cuts and fills, is impossible. The whole-hearted cooperation of citizens in dedicating portions of their property for public use has done much to make progress possible.

It is interesting to note, however, that some of our roads opened nearly two centuries ago had rights-of-way of 40 to 50 feet. These include Old Lancaster Road, opened 50 feet wide in 1741, County Line Road, opened 50 feet wide in 1751, Hagy's Ford Road, opened 40 feet wide in 1758, and Old Gulph Road, opened 40 feet wide in 1762. New roads laid out today in Lower Merion Township must, by ordinance, be 50 feet in width with a minimum vehicle roadway of 24 feet.

—From a paper presented by W. E. ROSENGARTEN, Township Engineer, Lower Merion Township, before the convention of the Pennsylvania State Association of Township Commissioners.

Most Beautiful Steel Bridges of 1934

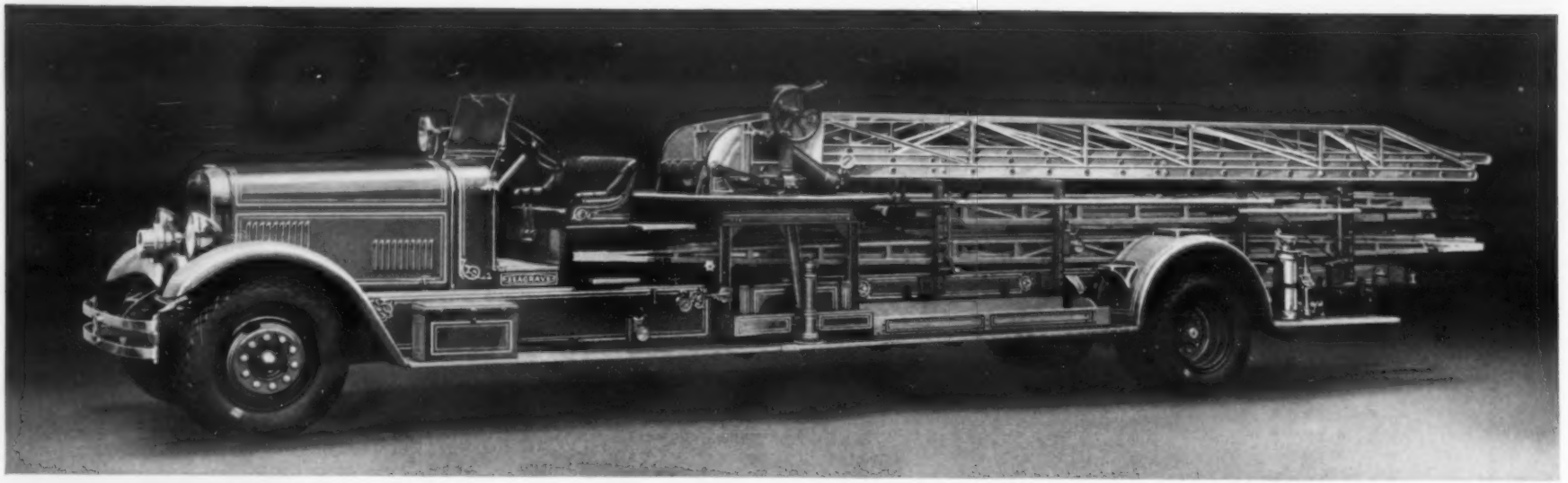
THE American Institute of Steel Construction has announced its awards for the most beautiful steel bridges built during 1934. The Bourne Bridge across the Cape Cod Canal at Bourne, Mass., and Douglas County Bridge, No. 667, a grade separation bridge between Road 44 and the Dodge Arterial Highway, near Omaha, Nebr., are the selected structures. These bridges will be decorated with stainless steel plaques by the Institute at appropriate ceremonies.

Each year the Institute invites a jury composed of architects and engineers of national prominence to select the most beautiful bridges in each of three classes. Class A includes those bridges costing $1,000,000 and over; Class B embraces bridges costing from $250,000 to $1,000,000; Class C includes bridges costing less than $250,000. Awards this year were made only in Class A and Class C.

The prize-winning bridge in Class A, the Bourne Bridge over the Cape Cod Canal, was designed by Fay, Spofford and Thorndike, engineers, Boston, Mass., and fabricated by the American Bridge Company, and is a Federal Works project, built under the supervision of the Corps of Engineers, U. S. Army. The three main spans of this structure are of the continuous type, with an arch over the Canal.

The prize-winning bridge in Class C, the Douglas County Bridge, was designed by Guy Dorsey, Assistant County Surveyor of Douglas County, Nebr.

DOUGLAS COUNTY BRIDGE NO. 667, NEAR OMAHA, NEBR.



Seagrave Service-Aerial-Ladder Truck

The Seagrave Service-Aerial-Ladder Truck is equipped with an all-steel aerial ladder having three sections which extend to a height of 65 feet.

This ladder is raised and lowered and the extension sections extended and returned by power developed by the engine which drives the apparatus.

THIS LADDER IS 100% HYDRAULICALLY OPERATED AND IS THE ONLY AERIAL LADDER SO BUILT.

Controlled by one man, the ladder can be raised or lowered to any position quietly, smoothly and promptly.

Due to the three-section construction of this steel ladder the overall length of the machine is less than 40 feet. Consequently, no tillerman is needed. The machine can be maneuvered or driven through traffic as easily as the conventional service ladder truck.

This all-steel ladder is of our own design and is constructed by us in our own factory, where, for more than fifty years the finest fire department ladders have been produced.

THE SEAGRAVE CORP.

COLUMBUS, OHIO

Litter Baskets—Garbage Disposal: Costs and Means

Wire Litter Baskets Appear in New York City

AS part of its program to clean up the streets of New York, which have been notoriously littered with everything from torn-up paper to whole newspapers, the Sanitation Department placed 15,000 trash containers at street corners throughout the city late in March, 1935.

If the rapidity with which these containers filled with newspapers, empty cigarette packages and waste paper is any measure of their effectiveness and their acceptance by citizens and visitors, the program has already proved successful. Commissioner Thomas W. Hammond of the Sanitation Department himself said, "With 15,000 trash containers on the streets it is no hardship for any one to walk a few steps before disposing of papers or other refuse."

Another use to which these trash containers have been put is the disposal of wrapped garbage, which always has been surreptitiously placed in gutters and on sidewalks by the foreign population on the lower East Side. Children and adults have been noted dropping bundles of this type into the trash containers with increasing frequency.

As a means of completing the effectiveness of the trash containers, the Sanitation Department began on March 25 an intensive clean-up-the-city campaign, on the first day of which 250 summonses were issued. These summonses were for such violations as sweeping refuse off the sidewalk into the gutter after 8 A. M., for not properly tying up rubbish, for not covering garbage cans, and for similar offences. Investigators usually warn persons who are seen throwing litter about, but if the offender is considered to be doing it deliberately and maliciously, he receives a summons.

Garbage Disposal Costs East and West

COSTS of collecting and disposing of garbage vary widely in any collection of statistics. The Public Works Engineers News Letter, issued by the American Society of Municipal Engineers and the International Association of Public Works Officials, recently published several paragraphs of variations.

In California, the State Board of Health, completing a survey of collection costs in 21 cities, found that the lowest charge was $2.25 a year per family, in Whittier; and the highest $9 to $12 a year, in Santa Barbara. Whittier employs a private collector, while Santa Barbara extends a franchise to a number of private collectors. South Pasadena, which has a yearly cost of $2.52 per family, has a municipal collection system.

Citizens of Reading, Pa., paid 35 cents last year to have garbage collected. The reduction plant, municipally owned, produced a total income of $16,842.29 from the sale of grease and tankage derived from the garbage.

The city of Jackson, Mich., this year has taken the bid of a private collector, which will provide service for its citizens at a rate of 55 cents a 10-gallon can per month, or $5 a year, payable in advance.

Sacramento, Calif., through its city garbage department received $41,755 last year from the sale of junk and garbage. Huntington, Suffolk County, N. Y., through special garbage collection services, brought in a revenue of $1,110 last year. Springfield, Mass., is planning to get an income from municipally collected garbage by hauling it to swine breeders outside the city.

Voters of Prince Georges, Md., a suburb of Washington, D. C., defeated a proposal for municipal collection of garbage and refuse which would have cost each householder from $5.50 to $10 a year, according to the number of collections.

"One of the difficulties in judging whether citizens are paying too much for this service," states Donald C. Stone, of the Public Administration Clearing House, Chicago, Ill., "is that municipal departments in many cases do not keep adequate records; therefore unit costs cannot be properly determined. These figures must be available in order to determine the most efficient method of garbage disposal and to make a true comparison among cities. In general, figures show that municipal collection fills the bill more adequately than collection by contract."

Send Out the Garbage With the Sewage from the Home

THE introduction of water into the home resulted in the problem of removing the spent water. This spent water was naturally impressed into the service of carrying the home-produced human wastes from the point of production. Now we come face to face with the process of using the same flow of spent water for the carriage of garbage, the other dangerous and troublesome home waste. Thus, the water-carriage method of garbage disposal involves the combination of the sewage-disposal process with the garbage-disposal process.

A recent suggestion in the field of garbage disposal is that of municipal grinding. The process involves the collection of the garbage in the usual manner, the transportation to municipal grinding stations located at convenient points along the route of main sewers, the grinding of this mass of wastes into proper form, and the discharge of the material into the sewer for transportation to the point of disposal. If the grinding stations are located at central points, the distance of haul of garbage is reduced, and the public sewer is being utilized for the transportation of the material to the sewage treatment work. In other words, the garbage is being disposed of by the water-carriage method, just as sewage disposal is today a water-carriage process.

The process of grinding garbage at municipal stations and discharge of the pulp into sewers, I have labeled the water-carriage method of disposal, in counter-distinction to the dry collection method. While the sewage flow will be utilized for the transportation of the garbage from the central grinding station, this process can be classed as only a partial use of the water-carriage method. The usual home handling and storage of garbage will be required, and the municipal or private collection and transportation system will be required to move the material to the point of grinding.

The water-carriage system of sewage disposal begins at the home. We do not store our human wastes in cans and collect these cans for transportation to the point of disposal. If garbage is an objectionable home waste, cannot the removal from the home be made as instantaneous as sewage? Can we not make use of the vast amounts of waste water in each home for the water-carriage of properly prepared garbage from the home, instantaneously as produced?

What would be the advantages? It may be rather difficult to fully impress a man with the advantages of instantaneous disposal of kitchen wastes, but the female of the species is keenly alive to the situation. As our homes have been revolutionized by the introduction of the hundreds of magic-making aids which we now use, convenience, cleanliness and hygiene have been benefited. Through all this progress, the disagreeable task of rehandling food remnants, the trip to the garbage pail, and the insanitary conditions surrounding the can, have remained unchanged. The outhouse has been removed from the back yard, but the garbage can still remains.

Successful home disposal of food wastes requires the disintegration of the solids into a well-formed pulp which will mix with sewage, not clog home plumbing, flow successfully through public sewers without shoaling or putrefaction, and settle successfuly under present-day clarification conditions at treatment works, producing an effluent which is amenable to secondary treatment or successful dilution. All this must be accomplished without the production of added odors, or the upsetting of the biological process of sludge digestion or the mechanical-chemical-biological processes of sewage treatment.

The water-carriage method of garbage disposal is sufficiently established to warrant the intelligent, open-minded consideration of all sanitarians. The home disposal of food wastes, as produced, should appeal to the engineer as the adaptation of a present-day process to the solution of an age-old problem.

—Abstract of a paper by MORRIS M. COHN, Sanitary Engineer, City of Schenectady, N. Y., presented before the Indiana Section of the American Water Works Association

Consider

STREAMLINE

IN YOUR NEXT BUILDING BUDGET

WHEN your plans call for pipe and fittings for any purpose on new work or remodeling city projects, consider STREAMLINE Copper Pipe and Fittings carefully before you decide.

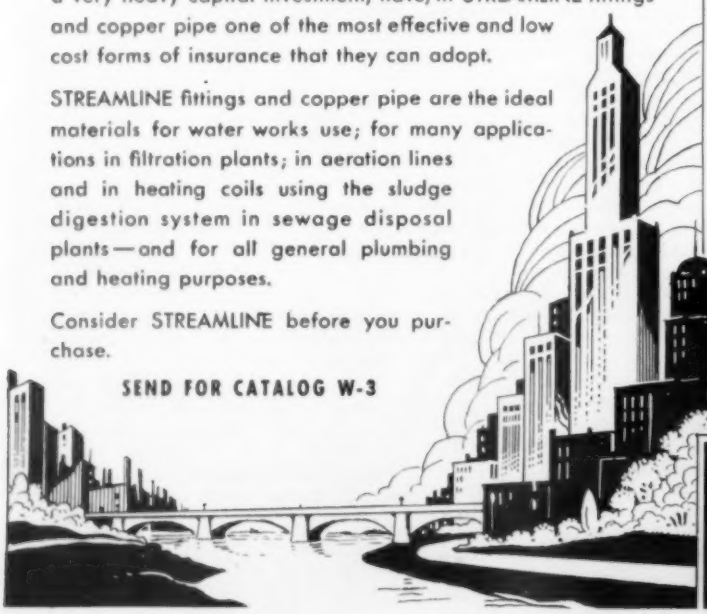
The STREAMLINE method is the most revolutionary advance in piping methods in the last hundred years. It utilizes the working of one of nature's laws—capillary attraction—to form the most permanently tight and strongest joint known.

Absence of clogging rust and freedom from the harmful effects of vibration are but a few of the many reasons why water works officials who are responsible for the return on a very heavy capital investment, have, in STREAMLINE fittings and copper pipe one of the most effective and low cost forms of insurance that they can adopt.

STREAMLINE fittings and copper pipe are the ideal materials for water works use; for many applications in filtration plants; in aeration lines and in heating coils using the sludge digestion system in sewage disposal plants—and for all general plumbing and heating purposes.

Consider STREAMLINE before you purchase.

SEND FOR CATALOG W-3



STREAMLINE PIPE AND FITTINGS

PORT HURON, **CO.** MICHIGAN

DIVISION OF MUELLER BRASS CO.

Imhoff Tanks — Service Connections — Explosions

Early Foaming of Imhoff Tanks in Dayton, Ohio

THE Imhoff tanks of the Dayton sewage treatment plant did foam badly for the first six months after the plant started, in November, 1929. This condition was not unusual when it is considered that we were attempting to start new tanks during the winter without any seeding with digested sludge. We used some lime in attempting to relieve this trouble, but without much success, so we left the tanks to foam, and when they ended this cycle, we pumped all the floating sludge off the top of the tanks, and they have continued to operate in a very satisfactory manner ever since.

It is my belief that the application of lime to a foaming Imhoff tank is not a very satisfactory means of combating this difficulty, because the addition of the alkali aggravates the acid-forming bacteria to the extent that they work harder than ever to maintain their existence. I feel that a foaming tank is caused by acid digesting conditions, and the medical doctors prescribe an acid for that condition in our own digestive tracts instead of an alkali when they wish to relieve such a condition. I therefore consider the same type of treatment may be more beneficial to a foaming Imhoff tank.

M. W. TATLOCK,
Superintendent, Sewage Treatment Plant.

Sewer Service Connections and Their Cost

THE construction of service connections from street mains to buildings for gas, water or sewer utility after the street has been paved, and sometimes only a day or two after the paving is completed, without permanent defacement of the pavement, is one of the world's great unsolved problems. A good start has been made in Akron, Ohio, for when the number of applications for sewer laterals became unusually numerous in 1930 the Council was prevailed upon to pass an ordinance authorizing the Director of Public Service to construct all sewer connections within the limits of the streets by direct employment of the necessary labor and the purchase of materials and supplies, and to charge the cost, paid in advance, to the owner of the property benefited.

The Division of Sewerage was fully equipped to perform this service and immediately set up a flat schedule of charges, which was revised downward in March, 1932, to conform with lower costs of labor and materials. Although material prices have again increased 25 to 40 per cent, the labor rates, which were never reduced, have not increased, and charges for sewer connections have remained unchanged up to this time.

The price schedule, computed according to the width of the streets, is as follows:

Width of Street	Schedule of Charge for Lateral	Additional if Paved
16 ft. or less..	$15.00	$18.00
20 "	18.00	22.00
25 "	22.00	24.00
30 "	27.00	24.00
35 "	30.00	24.00
40 "	32.00	28.00
45 "	35.00	28.00
50 "	38.00	32.00
55 "	42.00	32.00
60 "	45.00	35.00
65 "	50.00	2.50 per lin. ft. for ½ of paving width
70 "	53.00	
75 "	57.00	
80 "	60.00	
100 "	75.00	

This schedule applies to new 6-inch laterals, regardless of location of the main sewer in the street or the character of the excavation, and for a depth of 8 feet or less at the property line, if it is possible to obtain that depth. Depths greater than 8 feet, and laterals in the business district, are considered special cases, for which estimates are made for deposits and the actual charge made later. The actual charge is the cost of labor, material, hauling, etc., plus 15 per cent for overhead, etc.

For repairs and "cutting roots" the work is done at cost plus 15 per cent, and the deposits are as follows:

Cut roots (no excavation).....	$10.00
Cut roots (with excavation).....	20.00
Excavate and repair lateral—curb to walk.	20.00
Excavate and repair lateral in pavement..	50.00

Moving or reconstructing storm-water inlets to allow for driveways at gas stations or private homes is also done by city forces on the cost plus 15 per cent basis, the estimates of cost being made for each individual case.

For sewer flushing from cellar drains, a $5 deposit is required in advance. If opened, the charge is $5; if not, the money is refunded.

Deposits for all construction services are made in advance at the office of the Division of Sewerage in the Municipal Building. The cost schedules are estimated closely, allowing no profit. The city assumes full responsibility of construction, restoration of pavement and walks, and the backfill of ditches.

Previous to 1930, plumbers and contractors performed this work, the city issuing a permit, the cost of which was $3. Long after this work was completed and ditches, walks and pavement had settled, the city was left "holding the bag" for further repairs, all of which is eliminated under the present ordinance.

G. J. HOERBELT,
Sewer Maintenance Engineer, Division of Sewerage, Department of Public Service.

Coarse Screens at Brockton, Mass.

WE use a coarse bar screen with 1½-inch openings just ahead of the sewage pump. This screen removes about 250 pounds of material per 10½ million gallons of sewage flow. The daily flow of sewage is about 3.5 million gallons.

The screenings are disposed of by burial, but we believe that incineration is the best method if properly conducted.

F. H. KENNEDY,
Chemist, Brockton Sewer Department.

Screening Los Angeles Sewage

BOTH coarse and fine screens are used in Los Angeles, Calif. Approximately 30 tons of screenings are collected daily from a total sewage flow averaging 100 million gallons. The screenings are disposed of by incineration without odor.

LLOYD ALDRICH,
City Engineer.

Explosibility of Manhole Atmospheres

THE explosibility of an atmosphere depends on the quantity of combustibles and on the percentage of oxygen in the mixture. If 17 per cent or more oxygen is present, its effect is not important, but if the oxygen content is below this limit, it becomes important in determining the relative explosibility. If combustibles are absent, the flame of a safety lamp using naphtha as fuel is extinguished when the oxygen content of the atmosphere falls below about 17 per cent. Methane flames are extinguished and explosions are impossible when the oxygen is less than 12.0 to 14.6 per cent, depending on the quantity of carbon dioxide present. The higher the carbon dioxide content, the higher the oxygen value at which the flame is extinguished. Ethylene flames are extinguished when the oxygen content falls below 10 per cent, and carbon monoxide and hydrogen flames are extinguished at oxygen concentrations below about 6 per cent.

Since different combustible gases will not propagate flame, and explosions are impossible when the oxygen is less than certain critical values, depending on the individual gas and the proportions present, it is difficult to determine the explosion hazards of atmospheres containing less than 15.0 per cent oxygen, regardless of the amount of combustible.

In the investigations of combustibles in the manholes of utilities, in Boston, from 1929 to 1933, by the U. S. Bureau of Mines, the Edison Electric Illuminating Co. of Boston, and the Boston Consolidated Gas Co., the carbon dioxide content ranged from 0 to 16.7 per cent. According to Sayers Report, "Gas Hazards in Sewers and Sewage-Treatment Plant," Public Health Reports, February 2, 1934, page 147, 2 per cent carbon dioxide in otherwise pure air will increase lung ventilation about 50 per cent, 3 per cent will increase ventilation 100 per cent, and 5 per cent will increase it 300 per cent, the breathing being laborious. Three or 4 per cent causes an oppressive feeling and produces shortness of breath or panting, especially if one is working. Five or 6 per cent produces panting, headache, and flushed face; it is not possible to do very much work at these concentrations.

PANIC —*The Worst Hazard in Schoolhouse Fires can be* EFFECTIVELY SAFEGUARDED AGAINST *by installing* GAMEWELL DUALARM SYSTEMS

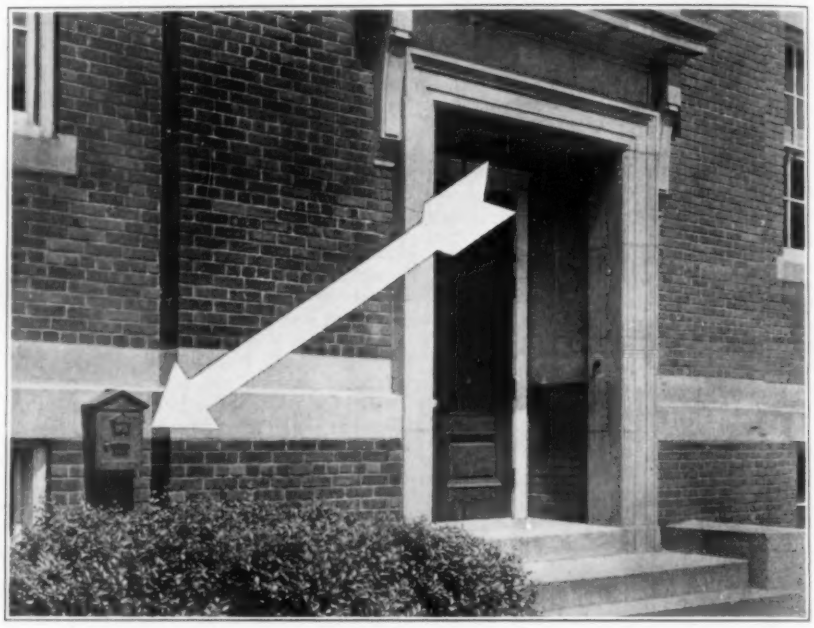


Photo shows how Needham, Massachusetts officials protect their school children. Arrow points to Master Type Fire Alarm Box which automatically calls the municipal fire department directly to the schoolhouse when DUALARM system, inside the building, is operated for fire.

SCHOOL fires of the past have taught a lesson which many fire department and school board officials have failed to heed—a lesson showing the vital need for protection against PANIC in schoolhouse fires.

PANIC has been the grim reaper of school children's and teachers' lives and the wrecker of human bodies in all major schoolhouse disasters of the past. In just six terrible schoolhouse fires, three hundred and fifty-three (353) deaths occurred—and PANIC was the largest contributing factor.

A PANIC is quickly created in a schoolhouse fire — the highly imaginative youthful mind being particularly susceptible to it. A mere wisp of smoke circulating from a small rubbish fire in a basement—a cry of "Fire" from the lips of a frightened child—then instantly, an orderly and happy group is quickly thrown into a turmoil—a stampede for the exits starts, while death and serious injuries follow.

The Gamewell *Dualarm*, a specially designed fire alarm system for schools, offers the most effective known protection against PANIC from a fire. It accomplishes the two most important things that should be done when fire is discovered in any school: (1) *Gets the children out safely*, (2) *Calls the fire department to the scene quickly and automatically.* The *Dualarm*, low in price, is the most complete and practical fire alarm system for schoolhouses that can be obtained. It requires no local battery that is likely to get out of order, and it costs nothing to maintain. Every fire chief and superintendent of fire alarm should urge his local school officials to install *Dualarm* Systems.

Write for a copy of our catalog leaflet No. 2002AC featuring the Dualarm Systems.

THE GAMEWELL COMPANY

"A Box a Block"

NEWTON, MASSACHUSETTS

Public Safety

Squad Car-Ambulance in Cook County, Ill.

WE have been using a combination squad car and ambulance for about two months and find it serving our purpose 100 per cent. We are using the

Pontiac two-door sedan with built-in trunk, with the rear seat cut in two and working on hinges and strapped to the roof and the front seat removed, which

enables us to handle a stretcher in first-class shape through the package compartment in the rear of the car. We had the body work done in a shop in Chicago.

Three of these cars are in use at present. This is an idea of Sheriff Toman, who wishes to give ambulance service to the people in the suburban towns in Cook County. The cars are available for squad-car duty 24 hours a day, and in cases of accidents or sickness can be converted into ambulances in less than one minute.

H. H. BURNS,
Chief Highway Deputy Sheriff,
Cook County, Chicago.

No Shorts for Yonkers

NOW that Alderman William E. Slater's ordinance, printed below and passed by the Board, is signed by Mayor Joseph F. Loehr, it can cost one 30 days plus $150 to appear on any street of the city in bathing suit or equivalent. Here's how:

GENERAL ORDINANCE No. 7—1935.
AN ORDINANCE REGULATING THE STREET ATTIRE OF PERSONS OVER THE AGE OF SIXTEEN (16) YEARS IN THE CITY OF YONKERS

The city of Yonkers, in Common Council convened, hereby ordains and enacts:

Section 1. No person over the age of 16 years shall be permitted to appear in bathing costume or in any other than customary street attire upon any public street or thoroughfare in the city of Yonkers.

Section 2. The provisions of this ordinance shall not apply to persons engaged in athletic contests for which permission has been granted by the proper officials of the city of Yonkers.

Section 3. Any person violating any provision of this ordinance shall be guilty of a misdemeanor and shall be liable to a fine not exceeding $150, or to imprisonment not exceeding 30 days, or to both such fine and imprisonment.

Section 4. This ordinance shall take effect immediately after publication as required by law.

Passed by the Commoun Council at a stated meeting held July 1, 1935, by unanimous vote of those present.

Power Raising Ladder at Cambridge, Mass.

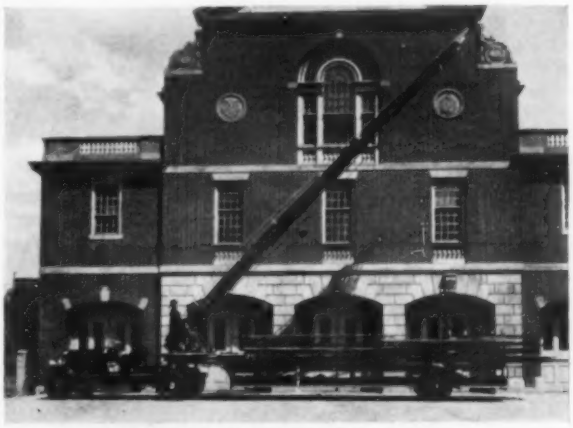
OUR new Peter Pirsch ladder and water tower is raised entirely by mechanical power, including raising and lowering both main and fly ladders and revolving the operating deck. This is all done by one man, and allows the remainder of the ladder crew to operate at the fire.

The truck is equipped with 341 feet of ladders, exclusive of the 85-foot aerial ladder, and has the usual equipment carried on ladder trucks, such as plaster hooks, axes, crowbars, life nets and life guns, jacks, covers, gas and smoke masks, and a 60-gallon booster tank and pump. In addition, we have a Morse ladder pipe attached to the top of the main ladder, equipped with a 1½-inch nozzle, which acts as a water tower.

The ladder truck and equipment weigh a little over 25,000 pounds and are 61 feet long from front bumper to overhang of ladder. The motor is a Hercules 6-cylinder, 5¾-inch bore by 6-inch stroke, 198 hp. The truck was placed in commission March 12, 1935, and the aerial ladder has been raised nearly 200 times since in drills, demonstrations and actual fire-service.

We have also used the ladder pipe on the main ladder, and on three occasions have had a 1¼-inch nozzle on the top of the fly ladder, which extended to the full height of 85 feet, delivering over 800 gallons per minute without the use of guy lines or leaning against the building. We believe we have the last word in aerial ladders, and I am very pleased to state it has given entire satisfaction since we acquired it.

HERMAN E. GUTHEIM,
Chief of Fire Department, Cambridge, Mass.



CAMBRIDGE, MASS., 85-FOOT LADDER MECHANICALLY HOISTED

Non-Criminal Fingerprints

To the Editor of THE AMERICAN CITY:

I have read with interest the article in your May issue entitled "Many Cities File Voluntary Fingerprints." The filing of non-criminal fingerprints as an infallible means of identity in the event of accident or illness resulting in death or incapacitation is a matter of great moment to me. I feel that the use of fingerprints in civil and commercial life, as distinguished from criminal identification purposes, has great possibilities for useful service.

J. EDGAR HOOVER,
Federal Bureau of Investigation,
Washington, D. C.

Steel Aerial Ladders

THE Seagrave Corporation has developed a service aerial ladder truck with the 65-foot *all-steel* ladder in three sections and hydraulically operated. The truck is under 40 feet in length and requires no tillerman.

Ohio's First Two-Way Radio

THE first two-way police radio system in the state of Ohio will be installed this summer by the city of Hamilton. General Electric ultra high frequency equipment; 150-watt headquarters transmitter and 15-watt transmitters on six prowl cars.

Atlantic City Proud of Layne Water System

Layne Wells Solve Problem of Salt Contamination For "America's Playground"

Proud of the thousands of compliments on the freshness, taste and purity of their city's water are officials of "America's Playground"—Atlantic City, N. J.

For, indirectly, each compliment is a tribute to their work in the face of serious obstacles to give Atlantic City a water supply second to none.

Separated from the mainland by approximately five miles of salty marsh, Atlantic City, prior to 1920 drew water from wells driven through 400 feet of salt water bearing stratum and about 300 feet of impervious clay.

Salt Contamination

But due to the salt water bearing stratum, many of these wells very rapidly became contaminated by salt water which seeped in through the casing. As a result they had to be abandoned sooner or later.

A number of years ago, the Layne-New York Co., one of the affiliated companies of Layne & Bowler, Inc., started to develop for Atlantic City wells of the clay rotary seal method, to meet the salt contamination problem.

These wells were rotated to the fresh water bearing stratum and clay was injected under high pressure in the salt water stratum to seal off permanently salt water from the wells.

Not only was the contamination problem solved, but the wells produced approximately 500 gallons per minute. Eleven more Layne wells followed, and the water from them is of high quality.

Find "Lost" Stratum

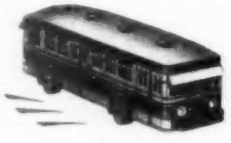
Several years later, at its own expense, Layne-New York developed for Atlantic City, on the mainland at Absecon, a 1,000-gallon-per-minute Layne well in a stratum that outside engineers contended did not exist.

Equipped with a Layne Turbine Pump, the well has been kept in production approximately 24 hours per day. City officials added it to the municipal system after a 30-day test.

This demonstration furnished conclusive proof that the deep stratum beneath Absecon practically eliminated for Atlantic City the problem of a source of supply, and that the city was assured an ample volume of water for all needs for years to come.

Layne service, such as was rendered to Atlantic City, is available to municipalities and industries everywhere through Layne affiliate companies located the world over.

1908 *Today?*



A mule car still COULD haul passengers. And that's the job for which it originally was designed.

But try to imagine a mule car as part of a modern transportation system! Yet hundreds of industries and municipalities that might laugh at the idea, rely for water supply on systems that belong to the mule car era.

Advances and improvements in the field of water supply have kept abreast of the remarkable advances in all other fields.

That's why a modern system of Layne Pumps and Wells can produce at a fraction of the cost an equal or greater volume of water than a system which might have been a model of efficiency 25 or 30 years ago.

All over the world, Layne is showing progresisve industries and municipalities how to increase water volume, yet lower costs.

Why not take advantage of the Layne organization's 50 years of rich experience to help you solve your water supply problem?

The coupon below will put you in touch with the nearest Layne representative, who gladly will discuss the problem with you without obligating you in the least.

THINK:
OBSOLETE EQUIPMENT COSTS 30% MORE TO OPERATE

LAYNE PUMPS
AND WELL WATER SYSTEMS

LAYNE & BOWLER, Incorporated.
Department B, General Offices, Memphis, Tennessee.

Without obligation to me, I would like to discuss my ☐ water supply, ☐ deep well pumping problem with your representative. Please have him communicate with me.

*Name*_____

*Address*_____

AUGUST, 1935

Vol. L, No. 8

The American City

470 Fourth Avenue
New York

35 Cents, $2 a Year

Hartley Dodge Memorial, Madison, N. J.

By JOHN H. TALMADGE
Borough Clerk

REPLACING the outgrown and scattered quarters in which its municipal offices and police and fire departments had formerly been housed, the borough of Madison, N. J., is now occupying what is believed to be the finest and most adequate municipal building to be found in any community of similar size. For this magnificent structure of granite, marble and bronze, the municipality is indebted to one of its most public-spirited citizens, Mrs. Marcellus Hartley Dodge.

Plans for such a building for Madison had been forming in Mrs. Dodge's mind for at least eight years, the site having been purchased and deeded to the borough by her in 1927. After the untimely death of her son, Marcellus Hartley Dodge, Jr., while touring France in August, 1930, following his graduation from Princeton University, it was decided by Mrs. Dodge to dedicate the edifice, when erected, as a memorial building.

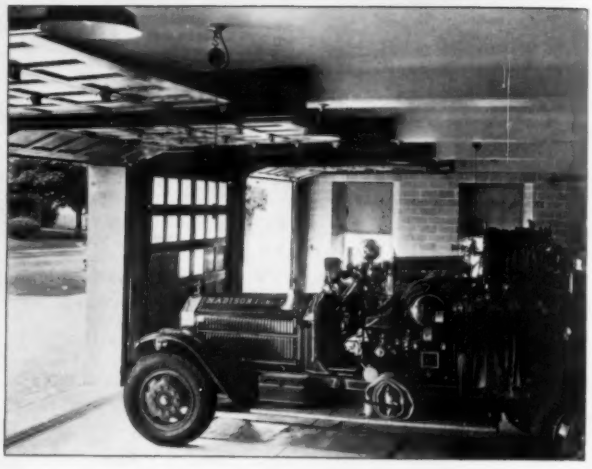
Fronting on Kings Road and occupying the entire block from Green Avenue to Maple Avenue, the building presents an impressive appearance as viewed from the Lackawanna Railroad station directly opposite, or by those passing along Kings Road, a main thoroughfare to and from Newark, N. J., and New York City.

Entering the main vestibule, one is impressed with the harmony and simplicity evidenced on every hand. Westland marble of the most beautiful blue-pink tint is used in finishing the vestibule, staircase, and upper corridor. One of the most striking features of the entire structure is the amount of solid bronze used throughout. Not only the entrance doors from the rotunda into the four main first-floor offices, but the public telephone booths, slop-sink closet, lavatories, etc., are of bronze. All exterior doors are of the same construction and add unspeakably to the richness and beauty of the structure.

R. S. Shapter, Architect *Photograph by Richard Dwight Hudson*

HARTLEY DODGE MEMORIAL—MADISON'S NEW MUNICIPAL BUILDING

On the first floor are the offices of the Borough Clerk, Water and Light Department, Board of Tax Assessors, and Tax Collector. On the second floor at the head of the stairs is a luxuriously appointed Council Chamber. Heavy mahogany doors open upon a checkerboard floor of alternate black and white marble. The walls are paneled in white. Red drapes lined with gray decorate the five windows. Two large chande-



R. S. Shapter, Architect

Photographs by Richard Dwight Hudson

UPPER LEFT—MAIN ROTUNDA
LOWER LEFT—COUNCIL CHAMBER

UPPER RIGHT—BOROUGH CLERK'S OFFICE
LOWER RIGHT—FIRE APPARATUS ROOM

liers of fifteen lights each illuminate this room. The Council table, dominated by the Mayor's desk at the end, is surrounded with oak chairs upholstered in rich red leather. The Mayor's office and a committee room are directly back of the Council Chamber, and connected by doorways on either side of the Mayor's rostrum.

On the second floor are also the offices of the Water and Light Department Superintendent, Borough Engineer, Board of Health, Borough Attorney, and Endowment Trustees, and several unassigned rooms for future use.

The Police Department, Recorder's office and Court occupy the entire easterly wing of the building. Here are the desk sergeant's quarters, Chief and Lieutenant's offices, social room, jury room, detention room, block of five cells, room for confiscated property, a large room for lodgers, shower baths, etc.

It is the feeling of those of us who are familiar with the building that no other volunteer fire department in the country enjoys quarters such as are here provided. There is room for five pieces of apparatus. The five bronze doors are of the automatic type, opening and rolling back overhead by control from the driver's seat. Within twenty-five seconds as each piece of apparatus rolls over an electric plate in the floor opposite each doorway, the doors close. Two spacious recreation rooms are provided, one equipped with pool and billiard table, the other for reading and cards. In the basement is space for quoits and other games. The social room on the second floor has a special maple floor for dancing—the only wooden floor in the entire building. This room is finished in knotty pine. The completely equipped kitchen would be a delight to any housewife.

Storage space is provided in the basement for surplus fire apparatus, police motorcyles and car, water and light meters and line material, election booths and ballot boxes; and there is a workshop for the Water and Light Department. Ample parking space is provided in the rear of the building for all cars used by the various municipal departments.

The taxpayers of Madison are indeed most fortunate in having among their number one who has both the ability and the inclination to assist so materially. It is understood that the structure has cost upwards of $1,000,000. Moreover, it is endowed most generously, so that for many years to come Madison, while enjoying all the benefits that go with a municipal building of this kind, will not be called upon to spend much more for upkeep than has been the case under former cramped conditions.

Many descriptive articles will doubtless be written regarding this building, all of which must fail to do justice to its beauty and grandeur. That it may be fully appreciated, it is necessary to look upon it with one's own eyes. Ample opportunity to inspect the building will be gladly extended to any municipal official or employee who may wish to come to Madison.

PWA Has Helped Sewerage Construction

By HENRY W. TAYLOR
Consulting Engineer, New York City

IN June, 1933, the National Recovery Act was passed by Congress with a view toward abating the depression. It was considered necessary to create a new Federal organization to undertake a problem without precedent. There were many delays and much red tape, together with the accompanying complaints and criticisms, to which engineers (including the writer) and municipal officials contributed their share. However, now that the smoke has cleared away, it seems only fitting to take a quiet moment to consider some of the things which have actually been accomplished.

The accomplishments represent, in many cases, projects which should have been installed ten years ago and which, without the impetus of Government aid, would not have been undertaken in the next ten years. The accomplishments also include installations well executed and on a sound economic basis in spite of contingent difficulties and cumbersome regulations. In this quiet moment we can afford to lay aside political considerations and differences of opinion as to Federal policies of financing and even temporarily discard the element of unemployment relief which was abated in many localities through the means of this new Federal service. It is the purpose of this brief article to state the salient facts with reference to three sewerage projects installed by this office under the auspices of the PWA. These three instances are to be taken only as typical of numerous other projects having somewhat the same history and completed with similar success.

Canajoharie, N. Y.

The garbage and rubbish dump areas at Canajoharie were rapidly being exhausted and the public was tiring of the smudge, rats and unsightly and unsanitary conditions of the dump. Raw sewage was discharged into the Mohawk River, and it was admitted that this second unsanitary condition would be the cause of state action in the not distant future.

The installation at Canajoharie consists of a combination of two disposal processes, namely, an incinerator and a sewage works. The incinerator has a capacity of 18 tons per 24 hours and the sewage works includes coarse screens, sewage pumping plant, preliminary sedimentation and heated separate sludge digestion. The sewage sludge is heated by hot water generated in coils in the combustion chamber of the incinerator, and the gas from the sludge digestion tank may be returned as an auxiliary fuel to the incinerator or used in a gas-fired hot water heater which serves the hot water storage tank. This stored hot water generated by the incinerator is also used for the heating of the building. Air-dried sewage sludge has been burned in the incinerator but is first needed for fertilizing the sandy site of the wastes disposal plant.

Application for PWA loan and grant was made in September, 1933, contracts were let in May, 1934, and a public inspection of the operating plant was held on December 15, 1934. Five separate contracts were let for different parts of the work, and the final costs under these contracts are tabulated below:

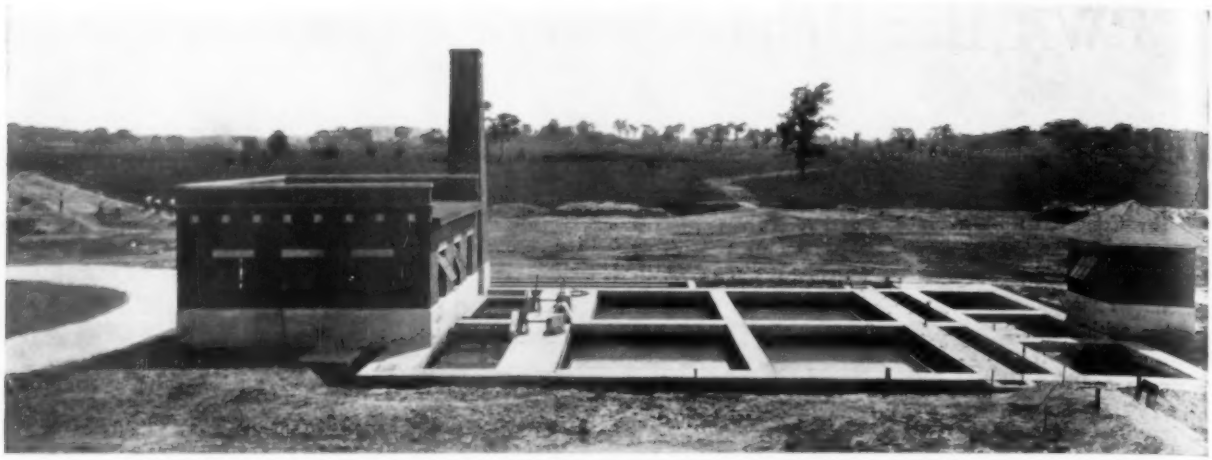
Construction contract	$30,145.88
Incinerator contract	12,805.00
Pumping contract	2,120.00
Sludge conveyor	2,340.00
Sludge digestion tank	3,465.00
Miscellaneous costs by village	772.00
Total (exclusive of land and engineering)	$51,647.88

The Beech Nut Packing Co. is located in Canajoharie and constitutes the main industrial activity of the municipality. Owing to the size of the industry compared with the normal population of the village, which is taken at 3,000, the wastes are much in excess of the normal population contribution, and provision has really been made for a normal population equivalent of 6,000. On the basis of the actual capacities supplied, which are adequate for 6,000 people, the per capita cost for the combined unit is approximately $8.50. Owing to the combination of the two utilities, it would be difficult to segregate the separate cost of incineration and sewage treatment, but it is considered that the cost of labor and materials on this job was well within the range of a commercial contract. In addition, there is the element of the grant, which will ultimately develop to be about $14,000. On the basis of the net cost to the municipality, the per capita charge on a 6,000 population equivalent is reduced to about $6.00.

St. Albans, Vt.

For the last 40 years the city of St. Albans has been discharging its municipal drainage into a small brook which traverses 6½ miles of agricultural territory. The summer flows of this brook are practically nil, and the conditions of the stream as they traversed the dairy farms produced sufficient agitation by the milk inspectors of two states to result in rejection of milk in some municipal markets. The project consists of an extension of the trunk sewer, coarse screens, pre-aeration, preliminary sedimentation, post-aeration, separate unheated sludge digestion, and 16,000 feet of outfall sewer, consisting of 18-, 15-, 12- and 10-inch piping. The outfall sewer short-circuits the damaged dairy farms and delivers the treated sewage to a point in the same stream beyond the range of agricultural activities and into the backwater of Lake Champlain. The outfall sewer is arranged for the continuation of the aeration process initiated in the sewage works itself, by means of mushroom aerators, drop manholes, artificial ventilation, natural ventilation, high velocities and turbulence. Contracts were let in November, 1934, and the plant was put into preliminary operation on May 14, and was in full operation July 15. The approximate final figures on the various contracts let in connection with this work may be stated as follows:

General construction contract	$65,000.00
Tile pipe contract	14,000.00
Cast iron pipe contract	4,000.00
	$83,000.00



VIEW OF SEWAGE WORKS FROM TOP OF SLUDGE TANK EMBANKMENT, ST. ALBANS, VT.
Office building at left, settling and aeration tanks in center, line of outfall sewer indicated in background, drainage well at right. Men working on lagoon channel at extreme left

The population of the city of St. Albans is about 8,000, and the plant design called for a capacity for 10,000 population. In addition to the plant as described above, there were installed under the auspices of the TERA two large lagoons containing an area of about 4 acres and having a capacity of over 3 million gallons, which are to be used in connection with wet-weather flows from the combined trunk sewer. The outfall sewer was designed to take three times the normal dry-weather flow to the isolated point described above, and additional quantities of flow from the trunk sewer are temporarily discharged into the lagoons, which answer as storage reservoirs during the period of storm, and which are drained after the subsidence of the storm, through the outfall sewer.

Malone, N. Y.

The Salmon River flows through the center of the municipality of Malone, and in 1933 there were discovered to be about 30 separate sewage outlets into the river. During dry weather when the power dams are not overflowing, the area between the dam and the tailrace of the power plant is practically dry, affording no dilution for the sewage discharged into this river section. The attendant nuisance need not be described.

Application for PWA loan and grant was first filed in July, 1933. On account of Federal hesitation, the work was started in October under the TERA, automatically transferred to CWA, and later the original PWA application was fractured to permit of continuance of CWA and to confine the PWA interest to a grant on the sewage works only.

The population of Malone is about 9,000 and the sewage works was designed for 11,000 population. Under TERA and CWA about 28,000 feet of intercepting sewer and lateral trunk sewers were installed from November, 1933, to April, 1935, ranging from 8 to 18 inches in size as per the following tabulation:

Size	*Lineal Feet*
18″ concrete	6,113
15″ concrete	3,456
14″ cast iron	820
12″ concrete	1,105
12″ cast iron	620
10″ tile	1,489
10″ cast iron	1,554
8″ tile	10,372
8″ cast iron	795
6″ cast iron	1,330
	27,654

The concrete pipe was built by the municipality with CWA labor, and in a concrete plant rented from the owner for the winter. The following tabulation will give the approximate expenditure under the different services:

Total gross expenditures including preliminary surveys, consultation, design, supervision, under TERA and CWA		$145,000.00
Net expenditures by the municipality		67,000.00
PWA contracts for sewage works:		
General construction contract	$20,305.29	
Pumping contract	998.00	
Sludge conveyor contract	3,145.00	
Electric, plumbing and miscellaneous work	5,360.21	
Total	$29,808.50	29,808.50
		$96,808.50

Under the PWA contracts the cost of the sewage works was less than $3.00 per capita exclusive of engineering. Allowing for the grant of about $9,000, the net cost is reduced to $1.90 per capita. The sewage works consists of a low-level pumping station, preliminary sendimentation, post-aeration, heated separate sludge digestion with a special design in which the sludge digestion tank lies underneath the settling tanks, together with a complete jetter system for the hydraulic cleaning of all baffles, for jetting of top sludge, and jetting of bottom sludge. The office building of the sewage plant also includes a large garage and shop, and the installation includes sludge drying beds and considerable landscaping. The PWA contracts for the sewage works were let in September, 1934, and the plant was put into operation about the 1st of February, 1935.

Economic Construction

In each case cited the impetus of Federal aid produced a quick result and solved a problem of long standing. In each case it is considered that the gross cost of construction would be well within range of commercial operations and that the net costs resulting from grant rebates have represented a real economy to the municipality in addition to the collateral benefits constituting the main object of the PWA movement.

Water Department Handicapped by Free Services and Unpaid Bills

By WILLIAM TROTTIER
Secretary, Lowell Finance Commission, Lowell, Mass.

THE Finance Commission of Lowell, Mass., as part of its budget work, has devoted a great deal of time to a study of the Water Department of that city. As a result of its deliberations, it feels that there is an opportunity to so conduct the affairs of the Department that greater benefit shall accrue to the water takers.

The Water Department of Lowell is the only department in the city producing and selling a commodity. It is more important than public service corporations in that its commodity is an actual necessity; and the difference between it and other public services is that it is municipally owned and therefore not run for profit. Valued at over 2¼ million dollars, the Water Department would have produced an average of $72,000 of revenue yearly if it were privately owned.

The Lowell Water Department must live on its own revenue, and income has been decreasing rapidly. From the high mark in recent years of $402,000, in 1923, the Department reached a low mark of $318,000 in 1932. In February, 1935, it had a surplus of $18,000, and accounts receivable of $54,519.39.

In living within its reduced income, the Department has curtailed substantially since 1926, at which time it was being run in a manner which might be termed too lavish. Expenses have been reduced by a policy of no replacements, until now, generally speaking, expenditures are adequate for the normal needs of the Department and not much more. The appropriation for supplies has been reduced to a point where any requirement for some slightly unusual supplies, such as sand and coke, becomes exceedingly difficult to finance within its revenue. Any substantial decrease in revenue from now on must inevitably be reflected in reduced payroll, which is the only item now left where any degree of control is possible.

Effect of Unpaid Bills on Cost of Water

At the present scale of maintenance cost, water in Lowell costs about $3.20 per year for every man, woman and child. Unpaid bills serve to keep up this cost. That is where the more than $54,000 of bills receivable as of February 1, 1935, operates against the water taker, and keeps his bills at a high level by precluding any possibility of rate reduction.

It cannot be repeated too often that the city is pumping substantially twice as much water as is being paid for. This does not mean that there are tremendous leaks in the ground, although undoubtedly there are some such that could profitably be stopped. The other city departments consume a great deal of water that is not paid for, but this, upon analysis, is not as unfair as it seems at first glance.

There is an ordinance providing for a hydrant rental fee of $10 per year per hydrant. This would mean a payment by the city to the Water Department of about $18,000 per year if paid. The city departments consume about $12,000 worth of water per year, most of which is not paid for. Another ordinance provides for a payment of $3,000 per year for the use of water on parks and playgrounds. This, likewise, is not enforced.

Free Water Is Wasteful

Free water is wasteful. When it is paid for, the consumer watches for leaks. If it is not paid for, no attention is paid to leaks, as a rule, and waste naturally follows. It should not be so, but experience has shown it to be true in most cases.

The large amount of water consumed and not paid for therefore becomes an added burden on the consumer who does pay his bill, and delays by just so much the time when he can get lower water rates.

Revenue Now Consumed by Routine Maintenance

The Water Department itself is using up practically all of its revenue in purely routine maintenance work, so that when any unusual expenditure arises, loans must be resorted to, thereby increasing the expense of keeping up the plant. The Department is adequately manned, as has been stated, and is headed by men of experience and good judgment. Many of the employees are of tremendous value in keeping the Department functioning properly. The plant is so laid out that the needs of fifty years to come can be met at no added cost for surveys. Expansion plans are on file. The thing that is lacking is a more judicious financial policy. This can be summarized in this way:

1. A determined effort to bring in all legitimate revenue.
2. The establishing of a reasonable surplus which may be regarded as a fund for the replacement of vital parts of the physical plant within its revenues, so far as possible.
3. A lowering of the water rates, which are admittedly high.

In order to bring this about, it is essential that the expenditures for the ordinary routine maintenance of the Department be kept within reasonable limits, and that the system of charges be maintained at a fair and just level.

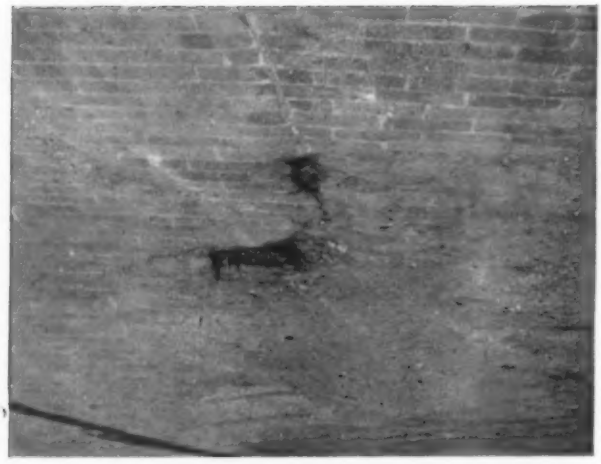
From the Poughkeepsie Fire Department

PERSONNEL of the Fire Department of the city of Poughkeepsie, N. Y. (population 40,000), numbers 35 paid men, a paid chief, two part-paid deputies. There is a modern Gamewell fire-alarm system with paid superintendent and two men always on duty. Apparatus consists of three 1,000-gallon pumpers—two American La France and a Mack; two combinations, a Stutz and a Mack; an emergency unit produced by the Department. Says Chris W. Noll:

"They run from 20 years of age down; no complaint of service on any piece of apparatus we have. We use all kinds and makes of hose, mostly wax- and gum-treated. We have a complete water system in our city OK'd by the National Board of Fire Underwriters."

Street and Sidewalk Repair

Many Unemployment Relief Projects



THE accompanying illustrations furnished to THE AMERICAN CITY by Hon. M. C. Smith, Mayor of Greenville, Miss., demonstrate what has been done in one city which has taken advantage of the opportunity presented through the President's relief program not only to furnish work for the unemployed in the community but also to use this program for general repairs and in the general interest of the municipality. Greenville has a population of 15,000. Its relief program has used from 60 to 95 per cent of the funds for labor.

THE CONDITION SHOWN AT THE LEFT EXISTED IN FOURTEEN BLOCKS OF BRICK PAVEMENT LAID IN 1904

NOTE THE LARGE GROUP OF HAND LABORERS IN THIS PAIR OF ILLUSTRATIONS, WHICH SHOW THE METHOD OF TEARING UP THE OLD PAVEMENT AND PREPARING THE SAND BASE FOR THE RE-LAYING OF THE BRICK

METHODS USED IN LAYING AND PREPARING THE SAND CUSHION AND RE-LAYING AND ROLLING THE BRICK ON ONE OF THE REPAVING PROJECTS DONE WITH RELIEF LABOR

Projects in Greenville, Miss.

Expend 60 to 90 Per Cent for Labor

INTERIOR VIEW OF THE EMERGENCY RELIEF ADMINISTRATION HEADQUARTERS, WHICH HAS A TOTAL FLOOR SPACE OF 47,846 SQUARE FEET, PROVIDING AMPLE ROOM FOR OFFICES, SEWING ROOMS AND STORAGE

The monthly expense of this office has been about $300, of which the city contributes $250 and Washington County $50

The photographs on these two pages show only a portion of the work which has been done in Greenville. Other types of work have included resurfacing gravel streets, the laying of reinforced concrete storm sewers, and improvements to the water works

THIS PAIR OF ILLLUSTRATIONS SHOW WHAT HAS BEEN ACCOMPLISHED IN CORRECTING HAZARDS AT STREET CROSSINGS THROUGH THE IMPROVEMENT AND REPAIR OF CURBS

ANOTHER EXAMPLE OF STREET CORNER IMPROVEMENT, WHICH WIDENED THE TRAFFIC WAY AND MADE THIS CORNER GENERALLY LESS HAZARDOUS TO PEDESTRIAN TRAFFIC

Taking the Skid Out of Icy Pavements

August Is None Too Soon to Prepare for Winter Perils

By G. N. GROWT
Assistant Engineer-Maintenance,
Wisconsin State Highway Department

PROBABLY no part of highway maintenance work has come to be more appreciated by the motoring public than that phase of maintenance activity dealing with icy pavements. The best manner of facing this hazard is to reduce the condition to a minimum, when possible, by keeping the pavements of the heavier traveled routes in good shape as a snow-removal operation. The better the snow-removal job, the less ice will form on the pavement; and the less ice on a pavement, the less the hazard and the sooner it will disappear with the coming of the thaw.

Many times it is impossible to reduce the ice condition, and the slippery pavement must be maintained in a reasonably safe condition for the traveling public.

The Wisconsin Method

Our method of maintaining an icy pavement has been to spread sand or cinders mixed with calcium chloride on the icy surfaces at all points that may be hazardous to traffic, such as hills, turns, intersections and railroad crossings. This work by the county highway departments has met with great favor from the public. For an icy pavement to be properly maintained, the spreading of this sand must be done as soon as possible after the icy condition arises, and the work cannot be done too quickly. Frequently, the ice condition comes during the night, and in several instances the counties have taken care of hazardous hill sections in the night time and not allowed the condition to remain until morning. This is the kind of service that is appreciated and should be given where necessary.

Equipment

The type of equipment required for dealing with icy pavements in this manner is neither elaborate nor expensive, and under the most serious conditions consists of only ordinary patrol trucks and one or more sand spreaders. Large trucks may be used to some advantage in stock piling material for use where the haul is lengthy, but for carrying out the spreading work, we believe the ordinary 1½-ton patrol truck is most economical. It is sometimes necessary that this equipment be used at night, and for such use the truck should be properly lighted as a maintenance vehicle. In addition, a light should be so attached to the truck as to throw a good beam to the rear of the vehicle, so that the workman can see what he is doing. This type of lighting equipment is especially called for when a sand spreader is used at the rear of the truck, because when the truck box is raised, neither the man on the spreader nor the driver can see the work and it becomes more luck than judgment if an accident is avoided.

We have recommended the use of the sand spreader for this work and believe it is by far the best and most economical way of handling the spreading. In selecting a mechanical spreader, it must be borne in mind that the machine must be able to handle the type of cover material that will be used. It should not plug too easily from oversize material and small frozen lumps. It should be simple to operate and must fit into the local conditions where it will be used. The sand spreader serves its purpose best where the section of surface to be covered is of quite an extent, such as a long hill. It is a mistake, however, to plan to take care of all the hazardous conditions in a county with one or two spreaders, because the time to serve the public is as soon as the ice condition is present, and the work should not be allowed to wait until a truck and a spreader are available.

Materials

For this type of maintenance work, the only materials necessary are sand or cinders and calcium chloride. In most localities, cinders are scarce and impossible to obtain, and sand, therefore, is more frequently used. No particularly high-grade sand is required but the best local sand available should be used. In the western part of Wisconsin, it is never necessary to ship in sand for this purpose, even in the clay and limestone ridge country. Here sand rock is blown out or a fair grade of creek sand is used. A high-quality sand is not of sufficient advantage to warrant a greatly added expense to secure it instead of a poorer local sand. It should not be inferred, however, that any sand will do. Fine sands blow away too easily on a wind-swept surface and do not furnish that traction desired. The sand selected should not contain dirt, clay or large pebbles, but should be fairly coarse.

Stock Piles

From the nature of the work, it is evident that this sand must be stock piled to make it available for use, and the time to do this is before the ground freezes in the fall of the year. The sand should be hauled from the pit and mixed with calcium chloride, and the piles placed near the hills, turns, etc., that will require sanding. The piles should be of sufficient size to last through ordinary winter conditions and provide several treatments of the surface, unless a local pit will be open and available for use throughout the winter months.

Calcium Chloride

Calcium chloride is better adapted for treating icy pavements than other chlorides having similar properties, because it is more effective at low temperatures and has less corrosive effects, and its cost is within reason when used economically. This material must be on hand at the time of stock piling the sand, and can be purchased from any of the dealers manufacturing and selling this product. Because economy is necessary to the success of this work,

calcium chloride should be purchased in carload lots only, to take advantage of the freight difference. Since not one county probably has use for even a minimum carload of 25 tons, the purchasing should be done by two or more counties going together on the shipment of the car. Oftentimes, cities also are anxious to come in on such a purchase. When a car of this material is ordered and arrives at its destination, the parties in the deal should be on hand for their part of the shipment, for storage space is generally limited.

Mixing and Covering

The mixing of calcium chloride and sand can be done well enough at no great expense by hand. As the stockpiling work is done, mixing can be aided greatly by loading the truck in layers of sand with calcium chloride between, and what added mixing is necessary can be done when the truck is dumping into the stock pile. The effectiveness of this mixture can be determined only by the ability of the chloride to hold the cover material to the ice surface, and is dependent upon the per cent of chloride in the mixture, the moisture content of the sand, and the temperature at which the work is carried on. A wet sand cover material would require a greater per cent of calcium chloride to make a mixture as effective as one where dry sand is used. For this reason, rain-soaked stock piles will lose their effectiveness, and if a covering is available for them they should be covered.

A 50-pound mixture of calcium chloride per yard of normally dry sand will not freeze in a stock pile protected from rain and snow at zero temperatures. This mixture, when spread upon the icy surface, will not thaw into it appreciably, and its effectiveness is not beyond that of ordinary sand at below-zero temperatures. It is this 50-pound mixture that has been set up as a maximum to be used in Wisconsin on concrete pavements.

The repeated treatment of calcium chloride and sand, particularly on newer pavements, has a detrimental scaling effect on the surface. It is believed that this detrimental effect is to some extent directly in proportion to the strength of the calcium mixture. It would follow, therefore, that the weaker mixtures are less detrimental. The material mixed in the 50-pound proportions is not as effective in zero and sub-zero weather as we should like it to be, especially where finer local sands are used, and the treatment must be repeated more often to serve traffic. As a further precaution, it would seem reasonable that an accumulation of this cover material on the pavement should be cleaned off when it is no longer needed.

On pavements other than concrete, such detrimental effects, if they exist, have not become prominent enough to warrant so much precaution, and in extremely cold weather a mixture of about 75 pounds per cubic yard has all the desired effects upon an icy pavement needed to protect traffic. This additional chloride can be added to the stock-piled material at the time of application, where extreme conditions warrant it.

Organization

An organization to properly deal with icy pavements should be such that the men chosen for this work know when to do it, what to do, how much cover material to apply and how far to go in their operations. I believe the patrolmen scattered about the county on their respective sections are the ones best adapted to make up this organization.

The preparation of the stock piles in the fall of the year can be done by available help outside the regular patrol organization under direction of the superintendent, and this operation should not be left until the patrolman is available to use.

During the regular maintenance season, the pavement sections are truck patrolled, and the truck equipment is best adapted to this winter work. The available sand spreaders in the county should be assigned to the patrolmen on whose section they are most needed.

In some conditions, it may be that the patrolman is not so situated as to be best able to take care of certain hazardous points. In such cases, arrangements should be made with a reliable party outside the regular patrol organization to handle such work. The organization must be made up of men who are responsible and who live reasonably close to the portions of the highway that commonly need this maintenance. The men of the organization should be held responsible to spread the cover material from the available stock pile when this protection is needed, which is at the time the icy condition arises and not after an accident has occurred to call attention to the condition. Speed of handling the situation is the prime reason for a widespread organization to handle this type of maintenance.

Spreading the Mixture

The spreading of the cover material by hand should not be merely an action of throwing the mixture off the back end of the truck, but should be a process of spreading the cover material in a reasonably uniform manner across the surface. On hill sections, traffic in both directions should be served and a good width of covering placed. At railroad crossings the right half of the roadway as the crossing is approached by traffic should be given preference in spreading, and the cover material should be carried back sufficiently far from the crossing to allow motor vehicles to break their speed, even if a vehicle or two are waiting at a blocked crossing. At turns, the cover material should not be merely scattered in the sharp angle of the turn but should be carried well back onto the tangent on the side of the pavement where traffic will approach the turn. A well-sanded turn, grade crossing, grade separation or hill is one that can be approached at reasonable winter driving speed and can be traveled safely when meeting traffic or when the vehicle must be brought to a complete stop.

The amount of cover material to apply should be that amount necessary to cover the surface enough to give the motorist complete control of his vehicle. Any more material added is a waste and may have a detrimental effect upon the surface.

What Routes Should Be Sanded?

The question of how far to go in carrying out this maintenance operation cannot be answered by any hard-and-fast rule. There must naturally be some difference in degree of maintenance between various routes, because all state trunk highways are not alike in the type of winter traffic they carry. It would therefore be uneconomical to carry out this work on anything but the most serious conditions on a route unsurfaced by pavement and carrying

purely local winter traffic, where the team sleigh must be given some consideration in snow-removal operations. Paved routes, however, fall into a class pretty much the same as to type of traffic, although the amount may vary greatly. On these paved routes, there is often too great a variation in the degree to which this part of winter maintenance is carried in the different county organizations. The work should be limited to icy conditions only.

Some snow on the surface of a pavement is not an icy condition until the surface becomes too slippery for safe winter travel at a turn, a hill, etc. A slight grade or curve may be slippery but it should not need sanding. A general icy condition on a route may be less dangerous to traffic than a pavement that is mostly clear of ice. The pavement mostly clear of ice invites speed and a shaded icy curve then should require attention.

Generally speaking, the hazards of an icy pavement will stand out to the patrolman or superintendent, if he mentally puts himself in the position of the motorist who may be unfamiliar with the road and who, driving at reasonable speed for the general condition of the surface, has to take what comes before him. While it is realized that this type of maintenance activity has met with great favor from the traveling public, the funds available for the work at this time do not permit treatment of the entire surface of an icy route regardless of its importance.

It is evident that to deal properly with icy pavements, this type of maintenance requires the best efforts of the superintendent and county highway organization. Conditions change rapidly in the winter months, and supervision cannot be too close for economy in the work and service to the public. It is needless to expect that with the best of organizations all the winter motorists can be kept on the pavement; that is an impossibility, because too many drivers are traveling at summer speeds on winter roads. Our duty is plainly to give the reasonable winter driver the protection he cannot safely do without, and to give it to him when he needs it.

SOURCE AND DISTRIBUTION OF PUBLIC WORKS FUNDS

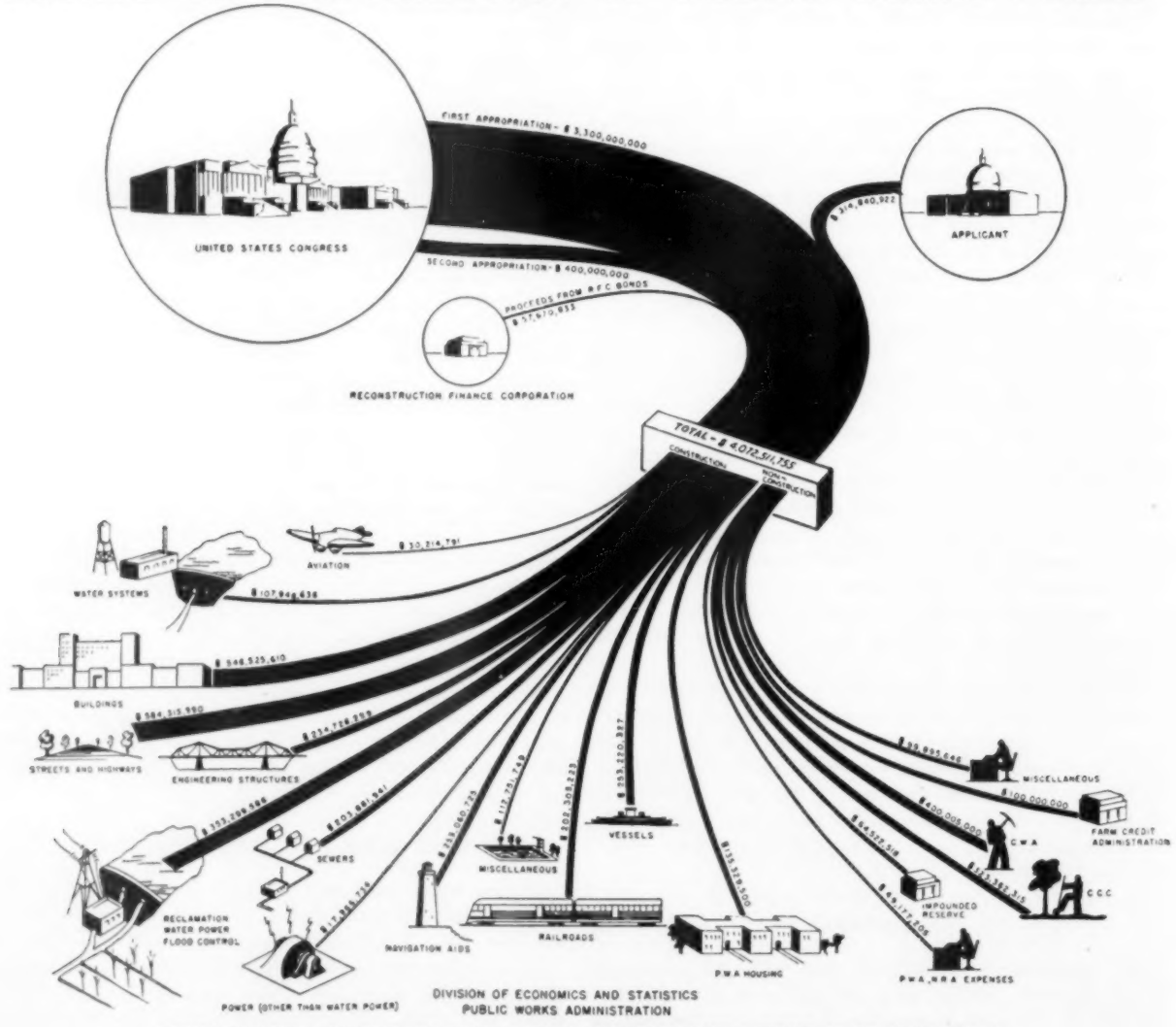


CHART SHOWING SOURCES AND DISTRIBUTION OF PUBLIC WORKS FUNDS AS OF APRIL 1, 1935
From the new book, "Back to Work: The Story of PWA," by Harold L. Ickes, Secretary of the Interior and Administrator of Public Works. (See page 93 of this issue)

280,000 Motor Vehicles

Owned by States and Local Governments

The Annual Bill (Estimated)

New vehicles	$30,000,000
Gasoline	30,000,000
Lubricating oil	3,000,000
Parts and accessories	6,000,000
Tires and tubes (passenger)	1,380,000
Tires and tubes (trucks)	6,300,000
	$76,680,000

AT a recent meeting of a technical society whose committees in the course of a year had drawn up a number of highly important but controversial reports, it was explained that these reports were merely tentative, that the committee had known that there would be many objections to them; but that these reports were so much better than any other information hitherto available that it had been decided to present them. Under these circumstances, the reports were accepted. It is in this spirit that the U. S. Bureau of Public Roads' tabulations of "Motor Vehicle Registrations" must be used. Compiled as they are from reports of state authorities whose statistics are not always comparable, many footnotes are needed for accurate analysis; as an over-all picture of the number of vehicles in the service of state, county and municipal governments, they are roughly indicative of the total. In any event, they are the only annual governmental statistics that aim to supply the need for the information tabulated.

Accepting the tax-exempt figures at their face value, there were in 1924 a recorded total of 44,986 motor vehicles registered free of tax by state and local governments, and 193,911 such vehicles in 1933. These figures, exclusive of motorcycles, are as follows:

1924	44,986	1930	140,440
1925	71,801	1931	143,096
1926	94,484	1932	143,666
1927	93,689	1933	193,262
1928	103,618	1934	193,911
1929	118,828		

As a measure of all motor vehicles owned and operated by states, counties and municipalities (hereafter designated "local governments") these figures are admittedly incomplete. In 1924, they are incomplete for 27 states; in 1925 for 24 states; in 1926 for 22 states; in 1927 for 21; in 1928 for 17; in 1929 for 15; in 1932 for 15; and in 1933 for only 4 states. Thus there has been a gradual improvement in the reporting by the states of these tax-exempt figures, culminating with substantial accuracy in 1933, inasmuch as the four states omitted pay vehicle taxes and their vehicles are therefore included with the figures for tax-paid registrations.

Thus it is known that in 1934 there were 193,911 motor vehicles owned by local governments on which registration taxes were not paid. What is the *total* number of motor vehicles owned by these governments? A working answer to this question can be obtained by examining the U. S. Bureau of Public Roads statistics for the year 1932; for in this year a count was taken of "publicly owned and tax-exempt motor vehicles in the United States in 1932."

Regarding these figures the Bureau writes: "The best information available at the present time will be found on page 90 of the enclosed copy of the "Taxation of Motor Vehicles in 1932."* This table shows information by states but does not separate vehicles owned by towns and cities.

This tabulation shows a total of 259,467 motor vehicles owned by local governments plus tax-exempt vehicles not so owned. Subtracting motorcycles, leaves 253,750 to compare with the 143,666 tax-exempted vehicles recorded for this year in the usual manner, from state records.

The 1932 totals are as follows:

		Per Cent of Total
Passenger cars	72,904	29
Busses	12,734	5
Motorcycles	6,737	3
Trailers	32,865	13
Trucks and tractor trucks	124,767	50
	250,007	100

What the 1932 Figures Show

States in which the local governments owned more than 10,000 motor vehicles in 1932 were California, Iowa, Michigan, New York, Ohio and Pennsylvania. Vehicles owned per 1,000 population, exclusive of California because of the inclusion of public service vehicles, and of Ohio because the figure includes 24,645 trailers of less than 1,000 pounds, were respectively as follows: Michigan, 2.2; New York, 1.8; Ohio, 1.6; Pennsylvania, 2.3; average 2. This, indeed, is about the average for the country as a whole.

The heaviest truck-owning states, exclusive of California, were: Illinois, 4,710; Michigan, 6,410; New Jersey, 4,618; New York, 14,850; Pennsylvania, 16,826; Texas, 7,023; Wisconsin, 4,624; a total of 59,061 out of a grand total of 104,947, or 56 per cent. This is at the rate of 1.24 per 1,000 population, against 0.9 for the country, and at the higher rate there would be 40,000 additional trucks owned by the local governments. Manufacturers take note.

Owners of the largest number of passenger cars were: Kansas, 3,172; Massachusetts, 2,978; Michigan, 2,857; New Jersey, 3,797; New York, 6,008; Ohio, 5,772; Penn-

* This publication may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C., for 35 cents.

sylvania, 4,555; Tennessee, 2,832; Texas, 2,038; a total of 33,709, or 0.64 cars per 1,000 population. This was about the rate for the country.

More than 1,000 busses are owned in each of five states —Michigan, Ohio, Tennessee, Texas and Washington. At this rate of 0.28 per 1,000, there would be 34,000 owned instead of 12,000.

In the ownership of motorcycles, the outstanding states, exclusive of California, were New York, with 1,162, and Pennsylvania, with 1,375. At this rate of 0.11 per 1,000, there would be 14,000 for the country instead of 6,951.

The Big Fleets

All these motor vehicles—250,000 in 1932 with many additions since—are owned, operated, maintained and replaced by 48 states and the District of Columbia, by hundreds of counties, townships and districts, and by thousands of municipalities. Some of them are concentrated in large fleets, while others are distributed a few to a political unit.

The vehicles owned by a state government are comparable in a way to those owned by a large city. The big user of cars and trucks in a state is the highway department. The New York State Highway Commission owns 1,900. The New York City Department of Sanitation owns 3,364; the Police Department owns 799, the Fire Department 741, and the Department of Water, Gas and Electricity 334.

Ownership by some other highway departments is as follows: Illinois, 2,000; North Carolina, 1,911; Texas, 1,401; Indiana, 1,460; Virginia, 1,163; Pennsylvania, 1,501; Tennessee, 1,146; Minnesota, 637; Florida, 432; Kansas, 510. Against these can be set the Los Angeles Department of Water and Power, 1,142, and the Mechanical Department of that city, with 696 cars and trucks, the Philadelphia Bureau of Maintenance and Repair, 526. Detroit owns 1,229 vehicles against 625 by the State Highway Department, and will add 52 trucks this year.

City-Owned Vehicles Increasing

The rate at which the cities are motorizing is indicated to same extent by a survey made this year (1935) by THE AMERICAN CITY. The cities surveyed range from the 8,500-8,800 population of Sheridan, Wyo., and Twin Falls, Idaho, to the 1,569,000 of Detroit, and aggregate 3,285,000, or an average of 180,000 per city.

These cities now own 4,238 motor vehicles, compared with 3,041 in 1928, an increase of 39 per cent in seven years or 6 per cent per year. This growth, moreover, has not been merely in passenger cars and trucks, but also in the numerous special types of vehicles used by cities. For example, while the city of Long Beach, Calif., now owns 45 more trucks, 8 more tractors, and 20 more automobiles than it did in 1928, it has equipped itself with the following vehicles, none of which it had then: 1 flusher, 12 graders, 4 rollers, 2 sweepers, 2 ambulances, 12 motorcycles. This is not a bolt that has been shot, for the city will purchase this year 10 trucks, 12 cars, and 8 motorcycles. San Diego has been equally active, adding sprinklers, dirt loaders and compressors, besides the types mentioned for Long Beach, and this year will purchase 12 trucks, 6 cars and a compressor.

Spokane has added oiler, flushers, graders, rollers, sweepers, snow loaders, police wagons, and fire apparatus to the number of 45 where it had none in 1928, and this year will buy trucks, graders, cars, police and fire apparatus, to the number of 20 pieces.

Salt Lake City owned 151 vehicles in 1928, now has 275, and this year will add 17 trucks, 20 cars and 5 motorcycles. Milwaukee will buy 18 trucks and 30 cars.

The Annual Bill

At a rate of increase as conservative as 6 per cent per year, the 250,000 motor vehicles of 1932 have now become 280,000. At a minimum figure, these publicly owned vehicles consume $30,000,000 worth of gasoline, $3,000,000 worth of lubricating oils, and $6,000,000 worth of parts and accessories.

The remarkable fact is that there has been this increase in municipally owned vehicles. The Automobile Manufacturers Association reports total purchases in the entire country for all purposes as only equaling replacements for the three years 1931-33. In addition to these *new* municipal vehicles worth some $10,000,000 per year, there have been replacements amounting, at 7 per cent per year, to $20,000,000.

How much for tires and tubes? There are 87,000 passenger automobiles, calling for 122,000 replacements of casings and tubes, according to the Rubber Manufacturers Association. The wholesale prices of these, according to current Government reports, are $9.80 for tires and $1.50 for tubes. Thus the states and cities buy each year about $1,380,000 worth of these products for passenger cars only. In addition, there are about 126,000 trucks, excluding all trailers and deducting 25,000 for tire-less vehicles. The Rubber Manufacturers Association estimates truck-tire replacements at 1.5 per vehicle, which gives a total of 189,000 replacements. Average wholesale prices are $28.65 for tires and $4.75 for tubes. These figures produce a total of $6,300,000 for truck tires and tubes. This gives a grand total for both truck and passenger tires and tubes of $7,680,000.

To the Editor of THE AMERICAN CITY:

It is highly desirable to have entirely accurate figures for the total number of motor vehicles registered in all states during each year by classes. The variation in state laws and registration practice, however, makes this impossible at the present time. Private and commercial registrations are accurately recorded in all states, although variations in registration classes prevent a wholly accurate classification of vehicles by type. In the case of publicly owned vehicles and those that for other reasons are exempt from the payment of registration fees, the figures reported are incomplete in many cases. Some states report only state-owned vehicles; others, although reporting vehicles owned by local governments, do not report police and fire-department cars, and other special classes, as these vehicles are exempt from any sort of registration. As noted in your article, a number of states charge against publicly owned vehicles the same fees as are imposed on private and commercial registrations.

An accurate outline of the variations relative to the registration of official vehicles would require a study of the state laws and considerable correspondence with the states. As there are relatively few official vehicles in comparison with approximately 24,000,000 private and commercial registrations, we have not as yet made a special effort to obtain more complete figures for these vehicles.

In the 1932 survey detailed studies were made of the registration records in all states, and tax-exempt vehicles were segregated from other registrations, the number being 259,467. Even this total is probably not complete, as it does not include official vehicles which are not required to register with the state motor-vehicle departments.

We are striving to increase the accuracy of our motor-vehicle tables. It should be remembered, however, that the states are interested mainly in the revenue derived from motor vehicles. It appears that they do not have inducement to set up an accurate record of vehicles exempt from the payment of registration fees. This Bureau has depended for its information entirely on the records of the states.

H. S. FAIRBANK,
Chief, Division of Information, U. S. Bureau of Public Roads, Washington, D. C.

Potted Plants? Or Adequate Landscaping for Community Projects?

By MARJORIE S. CAUTLEY
Landscape Designer, Ridgewood, N. J.

THE landscape development of community projects differs from the development of parks and large private estates chiefly in the fact that when building operations are undertaken on an extensive scale, the topography of the land must be altered to meet the requirements of sewers and street grades. Hence from a horticultural point of view, the character of the soil is destroyed, and must therefore be re-created before planting can be considered. This involves an abnormal expense, which is seldom provided for in the budget.

When good topsoil exists, it can be stripped and piled at a cost of 50 cents a cubic yard before sub-grading operations are begun. But that is only half the story. After buildings are completed and sidewalks laid, the topsoil must be replaced and spread by hand to a finished grade. On large areas this can be done for another 50c per cubic yard, but on small areas, where the soil has to be wheeled in by hand over walks and banks, the cost of handling is practically doubled. Then why not purchase it at $1.00 or $1.25 a yard to save time and trouble?

GARDEN CITY APARTMENTS, CITY HOUSING CORPORATION, RADBURN, N. J.
The limited dividend corporation is committed to good construction, durable pavements, community recreation, and planting which, when mature, should increase in value as the buildings depreciate

Cost of Topsoil Plus Excavation

The answer is obvious to any one interested in conservation. Topsoil cannot be manufactured like bricks. It is the result of decaying vegetable matter mixed, throughout centuries of time, with pulverized minerals, and it exists in a limited quantity over the surface of the earth as a thin layer—thinner on hillsides and thicker in valleys. Along the beds of streams, in swamps, and on the bottom of ponds a rich layer of black soil is known as "muck" by the farmer, and as "humus" by the gardener, who buys it by the bag or ton, to recondition poor soil. In gravelly areas, as on Long Island, concentrated humus can be worked into the ground in sufficient quantity to insure satisfactory plant growth, more cheaply than topsoil can be supplied. The reason is not that humus is less expensive than topsoil; on the contrary. But by working it into the existing sand and gravel, the cost of excavating shrub beds, etc., can be eliminated.

In clay regions, such as northern New Jersey and The Bronx, New York, this is impractical. Existing subsoil packs and bakes like cement. It is impossible to spade, and has to be broken up wth a pick and removed. Where steam shovels and trucks can be used for excavation, the cost varies from 50 cents to 60 cents a cubic yard; but where the work must be done by hand, the cost of excavation ranges from $1.50 in open areas, such as foundation planting along streets, to $2.00 in closed courts. The extra handling necessary to remove excavation from interior courts increases the cost, just as it increases the cost of topsoil which must be wheeled from trucks into the courts by hand.

Therefore, in estimating landscape costs for housing developments, topsoil in place, plus removal of excavation, may vary from $4.00 to $5.00 per cubic yard, depending on local wages and whether relief labor is used or union labor. So much for the budget—and the planting of the grounds has not yet begun!

Landscape Allotment vs. Sales Value

"Cut those costs," cry the builders. "Cut the quantity of topsoil."

"Cut out the lawns altogether," replies the landscape architect. "Use surfacing that will neither dry out nor die out. At least a third of the layout for a community project can be thrown into gravel or sand-clay surfaces for intensive use if properly designed with a border planting."

"Cut the depth of soil for the border planting," comes the answer. "Cut out shrub beds, plant in pot-holes, cut the width of borders and the size of tree holes."

"Cut construction costs and increase maintenance?" inquires the landscape architect. "What chance of growth has a plant in a pot, or in a clay pot-hole? The leaves are already handicapped by the soot and gas of the city. What will happen when the roots exhaust that minimum allowance of soil? Why not chop them off and stick them in the ground like community Christmas trees?"

SPADING SUBSOIL

2A. Before spreading topsoil for lawns, it is advisable to spade the subsoil to encourage deeper root growth. In clay this has to be done with a pick

BANKS

2B. To avoid the cost of cutting grass on steep banks, ground covers may well be substituted for grass. Whereas 6 inches of topsoil may be sufficient for lawns, it is barely adequate for cover

"But this community project depends for its character upon the landscape effect," complains the sales department. "And the planting plans are exceedingly skimpy—not a tree over twelve feet high, hardly an evergreen, nothing but ribbon borders of hedges and small panels of lawns."

"Yes," replies the landscape architect, "this is low-cost planting for low-cost housing."

The real estate operator appreciates the sales' value of certain features, such as colored tiles in bathrooms, tricky kitchen equipment, gingerbread trim, and fancy evergreens. He skimps on construction, feeling that he will be able to sell before the foundations settle, the plaster cracks, the pavement heaves, the evergreens die. But the limited dividend corporation is committed to good construction, durable pavements, community recreation, and planting which, when mature, should increase in value as the buildings depreciate. A hawthorn hedge around a playground costs as much as a chain-link fence. The former attracts the city dweller, with white flowers, green foliage and scarlet fruits. The latter, unadorned, suggests a factory yard.

When buildings cover from thirty to forty per cent of the land, there remains from sixty to seventy per cent of the total area to be developed in "garden courts, parks, playgrounds, and shady groves." Five per cent of the cost of the buildings would cover the landscape development, provided that great economy is exercised in the design, and also in the selection of materials. But three per cent is totally inadequate.

So far, in the planning of community projects, permanent planting, with adequate soil and proper maintenance, unfortunately is considered as the last and the least important item in the budget.

STREET TREES

3A. These will thrive for one year on their own balls, and a second year on the minimum allowance of topsoil

3B. After the third year this tree will need heavy applications of fertilizer to promote growth

POTTED PLANTS FOR COMMUNITY PROJECTS

4A. Small trees or specimen shrubs are often needed to mark entrances

4B. Plant growth is handicapped by the amount of lime, brick and rubbish found at the base of foundation walls on large-scale operations

The entire appropriation for excavation, topsoil, surfacing, plants, and labor may never amount to the cost of the refrigerators; but if the development of sixty per cent of the land is considered as a permanent installation of definite sales' value, why should it receive an allotment which is equal only to such incidentals as radio outlets and awnings?

Building Skid-Safe Roads with Tar

By GEORGE E. MARTIN
Consulting Engineer, The Barrett Company

IT is a well-known fact that automobile driving under certain conditions is often hazardous because of the danger of skidding. That is, the force tending to push the car wheels out of their regular path is sometimes great enough to overcome the frictional resistance between the tires and the road surface. Increasing the sideways force increases the chances of skidding, and increasing the frictional resistance decreases them. The sudden application of brakes causes a rapid increase in the sideways force, and thus an increase in the tendency to skid.

Factors in Skidding

Some things can be done by the road builder to decrease the sideways force, although the most effective remedy, reduced speed, is entirely in the hands of the motorist. High crowns tend to increase the sideways force, and as flat a crown as possible should be used in all types of construction. The only function of the crown is to shed the water off the surface of the road and, for most types of tight surfaces, ¼-inch per foot is sufficient.

Sharp curves increase the sideways force and the danger of skidding. Curves should be laid out as flat as possible and should be elevated for the speed permitted over the road.

Steep grades are a factor in skidding, since it is necessary to use brakes in descending, thus increasing the tendency to skid. Flat grades, therefore, are less dangerous than steep ones.

The greatest opportunity in reducing skidding is in the increase of the frictional resistance between the tires and the road surface. Here again, a part of the remedy is in the hands of the motorist. Numerous tests have shown the danger of smooth, worn tires and pointed to the necessity for keeping the tires properly inflated.

Weather conditions have a great influence on the skid resistance of all road surfaces. Practically all tight surfaces are skid-safe when dry, and, on the other hand, the texture of the surface has little effect on its skid-proof qualities when it is covered with snow or sleet. The highway maintenance crew can improve these surfaces by the addition of abrasive material such as sand or cinders, but the road builder can do little to help this condition. Fallen leaves are another cause of skidding which cannot be corrected by the highway constructor unless he removes the trees entirely.

Making a Road Skid-Safe

The highway engineer can, however, build surfaces which will be skid-safe for normal vehicle operation when the roads are wet. To do this with tar is not a complicated operation, and a few simple precautions will insure satisfactory results. "Skid-safe" and "non-skid" are, of course, relative terms. With most cars it is possible to operate so as to build up the sideways force and overcome the frictional resistance of almost any road surface.

All grades of tar are used in producing skid-safe surfaces. There is little to choose between them from the skid-safe standpoint. Construction reasons dictate the choice of tar for a particular job. All construction and maintenance operations in which tars are used can be carried out so as to produce skid-safe surfaces.

Types of Construction

Surface treatments are used to produce a new wearing surface for that worn away by traffic and to correct slippery conditions by building skid-safe surfaces. The type of surface to be treated will determine the grade of tar to be used, which will range from a light cold surface-treating tar to a heavy hot surface-treating tar. Small-sized cover will be used on the cold surface-treating tars, either a clean sand or a small-size stone or slag chip or small gravel. Only sufficient cover should be used to prevent picking up under traffic. The exact amount will vary with the absorption of the tar by the original road surface, but will usually be from 10 to 20 pounds per square yard. A sandpaper finish will be produced which is non-skid.

The hot surface treatments will require somewhat larger aggregate in order to produce a stable surface. However, oversize aggregate an inch or more in size is neither necessary nor desirable. The best results are obtained when the faces of the aggregate are exposed evenly on the surface with the spaces between them tightly filled. About 10 pounds of covering material will be required for each 0.1-gallon of hot surface-treatment tar. The cover should be uniformly distributed over the surface. Excess cover may cause skidding on the loose particles on the road surface. Rolling will assist in producing a skid-safe road immediately.

Hardness and toughness of the covering aggregate will have an influence on the skid-resistance of the surface. However, unless an aggregate breaks down into a slippery, slimy mud, the surface usually will not be slippery from that cause. Aggregate which will produce a stable surface, which does not push out of shape under traffic, may provide a non-skid surface with tar.

The covering aggregate should be graded from the bottom to the top size so as to produce a closed, tight surface. The tar will penetrate into the aggregate particles and hold them tightly fixed in the road surface. This high percentage of exposed aggregate faces provides the necessary frictional resistance to produce a skid-safe surface even though the individual aggregate particles may be of small size.

Tar re-tread surfaces are easily built non-skid. In the final application of the tar seal coat, the same precautions should be taken as in surface treatments. As a matter of fact, the operations are identical. Here again, small-sized choke stone and small-sized cover stone should be used. New York State 1-A stone ranging in size from ⅛-inch to ¼-inch square openings, has been very satisfactory.

The final finishing operations on penetration macadam are the same as those on tar re-tread. However, since the surface voids are larger, the next larger size of choke stone is used with the same size of covering aggregate on

the seal coat. Open surfaces with large aggregate exposed are not necessary to produce a skid-safe tar penetration macadam. Fat spots are somewhat more easily formed in the penetration type than in the re-tread type, because the tar and stone are not mixed together as in the re-tread method. Uniform preparation of the original stone and uniform application of the tar binder will prevent them.

Plant-mixed tar pavements are non-skid, owing to the penetrating properties of the tar binder used, assuming the pavement is properly proportioned without an excess of binder. This is true even for quite tight surfaces using a large percentage of sand or similar aggregate. A sandpaper finish is produced to which the tires cling tightly. If the the tar concrete is stable, it will be non-skid.

Why is it possible to build non-skid surfaces with small-sized aggregate and tar? Do these surfaces remain non-skid under traffic and, if so, why? Why are tight, close tar surfaces non-skid? Thousands of miles of road built under various conditions, in different parts of this country and abroad, have proved that tar roads built thus are essentially non-skid and remain so. The answer is in the inherent property of the tar itself, which causes it to penetrate into the road structure and also in some cases into the aggregate itself. This, unless an obvious excess of tar is used, prevents the tar from bleeding up and covering the exposed aggregate faces. Tars are not softened by drippings of oil from automobiles, which is another factor in the preservation of the non-skid texture. Again, the tars are not easily emulsified without the addition of emulsifying agents, so that they will not be liquefied and carried over the surface of the aggregate by traffic.

All types of tar maintenance and construction operations can be carried on so as to produce skid-safe surfaces with no additional cost, using the aggregates ordinarily available in the locality where the work is being done.

ACKNOWLEDGMENT.—From a paper presented at the annual meeting of the Highway Research Board.

An Effective Type of Public Hearing on Planning Projects

By **HAROLD S. OSBORNE**
Chairman, Town Planning Board, Montclair, N. J.

THE Montclair Town Planning Board has recently made use of a method of obtaining the reaction of the public to planning proposals which—for certain types of case at least—has distinct advantages over the usual type of public hearing, where the public are invited at a fixed hour to meet in a body for discussion and expression of views on the proposal. The alternative method, briefly described below, is not novel but is adapted directly from the procedure of the City Planning Commission of Stockholm, Sweden, and other examples of its use could be cited. It is thought, however, that it would be of interest to city officials generally to have this method of procedure brought to their attention.

In Stockholm, as in so many other places in Europe, the City Planning Commission has what seem to an American very broad powers. For example, in making plans for subdivisions the Commission determines not only the location and width of streets and the size of lots, but also the location, floor area and maximum number of stories of each of the buildings. The recommendations incorporated in the proposed plan are usually presented not only in the form of a map, but also by the construction of a small-scale plaster model of the complete development, including the buildings.

When a new plan has been completed, instead of holding a public hearing in the sense that this term is usually used in this country, the Stockholm Planning Commission places the completed plan on exhibition in its offices for a considerable period, perhaps two weeks, in charge of a competent engineer. All interested property owners are notified in writing that the new plan is open for inspection for such period, and they are invited to call at the offices of the Planning Commission at their own convenience to review the plan and discuss it with the engineer in charge. If after this they have comments, they are requested to submit them in writing. After the period of public inspection, the Commission again reviews the plan and all comments received, makes such adjustment as may seem desirable, and adopts the final plan.

It is evident that for many situations this method has more to commend it than a single public hearing. It is more convenient to the interested property owners, for within a considerable period they can choose their own time for the consideration of this matter, and thus every one who is sufficiently interested to do so can review and discuss the plans. It leads to fuller discussion and explanations, advantageous both from the standpoint of the property owners in expressing their individual points of view, and from the standpoint of the Planning Commission in explaining in detail the points that are of interest to each one. It is a deterrent to irresponsible objectors, since there is no audience to listen to them. The submission of comments and objections in writing has advantages, because such comments are generally more carefully thought-out than oral comments and there is less possibility of misunderstanding.

The Montclair Town Planning Board has recently used this method for the consideration by interested property owners of a general plan for the future layout of streets in a portion of the town, about 250 acres in extent, now largely in undeveloped farm land. Upon the completion of a preliminary street layout for this district, information regarding the preliminary plan, and invitations to call at the Planning Board office and review it with the Town Planner, were sent to the property owners involved. Also, information regarding the availability of the plan for discussion was published in the local paper, inviting any others interested to review the plan. Altogether, owners or representatives of owners of 75 per cent of the area visited the Planning Board office.

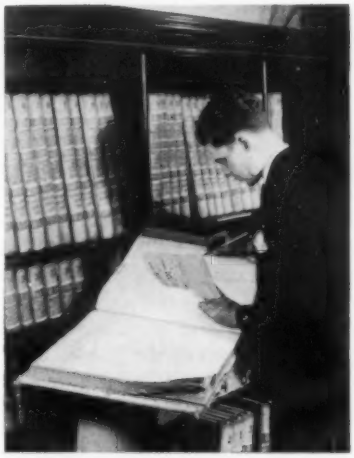
As a result of these contacts and of adjustments in the plan which it has been possible to work out, the revised plan has nearly unanimous support of those who have seen it. In advance of Planning Board action, the Board is now sending out a second letter, advising the property owners that the plan has been slightly modified, giving those who had objections an opportunity to see to what extent it has been possible to meet their objections and also giving a second chance for those who did not avail themselves of the first opportunity to review the plan.

The Montclair Planning Board does not consider that a public review of this nature meets its obligations for situations in which the law requires a public hearing, and in such cases this public review would be supplemented by a hearing. Even for those cases, however, it is the belief of the Board that a public review of this nature is a valuable procedure in advance of the public hearing required by law, when the project is of sufficient importance to warrant the increased time and expense involved. For other cases where no public hearing is required, this may often be the best possible method of obtaining that full interchange of views between the Planning Board and the public which is necessary for satisfactory town planning work.

1,390,000 Cards Replace 225 Books

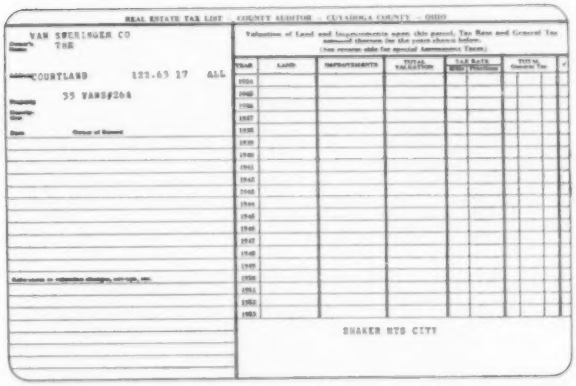
Cuyahoga County's New Tax System Pleases Public and County and Will Also "Fill the Bill" When Ohio's Antiquated Tax Laws Are Modernized

By **CLARK L. SIMPSON**
Certified Public Accountant, and
CHARLES B. RYAN
Deputy County Auditor, Cuyahoga County, Ohio



225 OF THESE ANNUAL VOLUMES HAVE BEEN REPLACED BY THE CARDS AT RIGHT

1,000,000 of these 8 x 5's were imprinted in the Addressograph department, the reverse side carrying the special assessment record for its entire period


REAL ESTATE TAX LIST — COUNTY AUDITOR — CUYAHOGA COUNTY — OHIO
VAN SWERINGEN CO
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SHAKER HTS CITY

390,000 of these 9 x 6's replace 120 cumbersome books and provide the tax history for a 20-year period

THE introduction of a new accounting set-up in the tax office of Cuyahoga County, Ohio, in August, 1934, presented many new problems. Office employees had through the years grown accustomed to handling enormous tax ledgers, large special assessment records, and numerous other books varying in weight from one to eighty pounds, with an equal variance in size range. The substitution of handy, medium-sized card records for these unwieldy volumes was vigorously objected to on the ground that any record as small as a card could easily be misplaced or lost but that a big ledger would always be in view. Defenders of the card system cited the loss of a tax ledger in 1930 as proof that even large books could be lost.

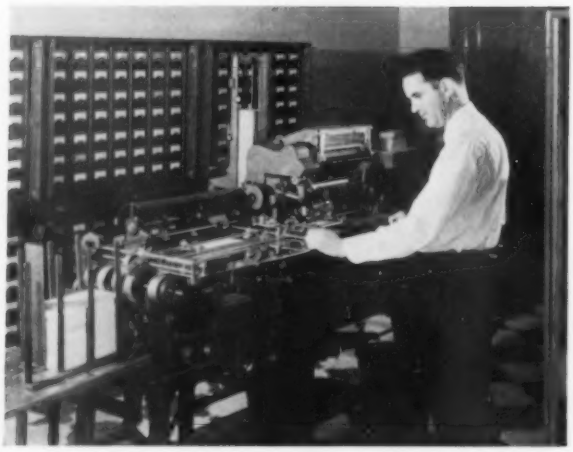
We insisted that cards could be handled as carefully as currency and that it was just as reasonable to insist that decreasing the dimensions of the dollar bill, which occurred some years ago, would result in increased losses of money as to hold the same for card record substitution. Our problem lay in making the clerks "card conscious" and in getting them accustomed to respecting the value of these records. This, of course, was no easy task. Clerks had quite a habit of taking out cards and either forgetting to return them or misfiling them. Every card was carefully labeled and card files properly indexed so that errors of this type could be attributed only to carelessness or, in early cases, to a lack of familiarity with the card system.

At the time we were retained to study the accounting system with a view to modernization, we found a great deal of duplication and many openings for the introduction of machines. The outstanding duplication of effort was in the annual writing of tax books covering 390,000 parcels of property and transcribing the same information by typewriter to the special assessment books. Inaccuracies crept into the typing, which the most careful recheck failed to locate. The high note of the system we finally selected was the use of the Addressograph, making possible the production of records in perfect accuracy and at high speeds.

Our record system included approximately 390,000 real estate cards, one for every parcel of property in the county. This card was designed for use over a 20-year period and has spaces on the face of it for values of land, improvement and totals, the tax rate, and the general and school tax by years. The name and property description are printed on this card from Addressograph plates, from which the tax rolls have been made up. On the reverse side of the card are spaces for all special assessments over a 20-year period, from which postings were made to the

tax duplicates. These cards replaced the Assessor's control record of 120 books which were laboriously typed each year.

Ohio statutes are quite specific in requiring a certain type of tax roll or duplicate, and although we consider the law antiquated, we must of necessity comply. Therefore we still use duplicates, which we have modernized to some extent but which still retain some of the very old features required by our out-of-date laws.



ROBOTS SUMMONED BY CUYAHOGA'S AUDITOR

(Top) Forty Comptometer operators calculate and extend the tax, which the machines in the left foreground list. At rear are the files housing the ledger cards described in this article

(Middle) Embossing the metal plates with the data to be imprinted on the tax ledgers and record cards. "Metal plates," says Mr. Simpson, "insure perfect reproduction of the same information each year—which was not true with the typewriter methods formerly used"

(Bottom) Imprinting owner's name and property description of taxable parcels on 8,000 cards per hour

There are in this county close to one million items of special assessments, and elimination of the 105 books in which they were listed annually meant the creation of almost one million more cards. This was no small stock of cards, even to the designers of this system, and we realized that the solution to making our system a success depended to a great extent on obtaining a convenient, available file system.

We studied filing equipment carefully and conferred with many equipment men before finally preparing a requisition for files. Ultimately, for housing the special assessment cards we decided on seven-drawer upright cabinet files for crossway filing, each drawer containing three trays to accommodate about 1,300 cards.

The real estate cards were more of a problem. Information on these cards must be available to the public, and yet, we decided, it would never do to have the cards themselves where the public could reach them. This meant that office employees must furnish the public with information desired. To facilitate this, we finally decided on a long metal counter, linoleum-topped, extending entirely across a large room, with files beneath not available to the public. The cards are in alphabetical order in drawers of 2,500 cards, with outer doors to be closed and locked at night. Conveniently sized trays for carrying loose cards were obtained for use in transporting the cards to various points in the office.

Our investment in filing equipment has proved most satisfactory. It is true that the Cuyahoga County Courthouse is fireproof and that from the standpoint of danger from fire no real hazard exists. However, our cards are given the protection afforded by steel files, which insures against loss or extraction during hours when employees are not on hand. During office hours, when the files are being used, we have reliable clerks on hand charged with the responsibility of supervising these records and furnishing any desired information to the public. This plan is working out quite satisfactorily both for us and for the general public.

The cards are kept in order by our own employees and are not handled by outsiders, and the public are receiving a type of service to which they are entitled as taxpayers. They are given excellent treatment and courteous, intelligent answers to inquiries. All possible information desired is contained on the real estate record card, which will serve this same purpose for a 20-year period.

A bill is pending before the Ohio Legislature to have the Auditor do the billing, instead of the Treasurer as at present. Another proposed bill provides for monthly payment of taxes. In the Auditor's office in Cuyahoga County, we have anticipated both of these innovations in tax-accounting routine and are prepared to handle both matters without hesitation when they come. The present Addressograph set-up is ideally fitted to do these jobs.

We do not boast when we contend that in Cuyahoga County today we have a system which will, without question, satisfy the tax-accounting needs of future years. Indeed, the Addressograph system was installed and practically every new step taken with a view to "filling the bill" if our Legislature should ever awaken to the need of modernizing Ohio's antiquated tax laws.

Adequate Record of Underground Structures of a Water System

By E. A. MUNYAN

Consulting Engineer; Manager, Water and Gas Department, Union Gas & Electric Co., Cincinnati, Ohio, and Union Light, Heat & Power Co., Covington, Ky.

ONE of the most important matters in the operation of any water utility is to know just what the utility property consists of—how many miles of main there are, where the valves and water services are located, and how many there are. Underground water mains and services make up the greater part of the capital invested in a water system, except for that invested in water towers, reservoirs, and pumping stations. In some cities the capital invested in the main lines of services is even greater than that for reservoirs and pumping stations. This article will deal only with underground structures.

Layout of Mains

The first illustration on page 58 shows a sectional water system is the general layout of the mains in relation to the streets and roads in the territory. The best way to do this is to make up a map to a convenient scale, or to sectionalize some map previously produced by a professional map maker. The latter is quite often the logical step, for professional map makers have the opportunity of keeping street names, building changes, etc., up to date more readily than the water utility, which would make changes in its records only as necessity demanded.

The first illustration on page xxx shows a sectional layout of the streets and highways in the city of Fort Thomas, Ky., which is served by the Union Light, Heat and Power Co. This layout is only one of a number of charts used for the entire system. The scale used on the original of this map is 200 feet to the inch, so that the streets are wide enough to locate readily the water mains, valves, fire-plugs, etc., on the proper side of the street. Details, however, are not given on such a map, but are left to other card records. Each of the maps is 29 by 43 inches in size, and they are kept in large loose-leaf map books with stiff covers for ease in handling. The sizes of water mains are denoted by codes, as shown in the first illustration. The length of any main on any street can be scaled from the map or determined from the detailed sketch card which will be described later.

The next step is a diagrammatic layout of the mains by sizes, as shown in the second illustration. This record was produced for us by the Pitometer Company of New York City in 1928, and has proved to be a very worth-while record. Mains are shown in various sizes according to a code given at the bottom of the print. This likewise is for general information, and is an even more general record than that shown in the first illustration, but serves an important purpose when any large new extensions are to be planned. Such extensions can be laid out from the maps with the future pipe line installations in view. The advantage of this map is its smaller scale, which permits a more complete view of the system at a glance. Elevations at various points on the system are also shown.

On many water systems in the past, only vague records were made when the pipes were laid, the records consisting quite often of a surveyor's layout or some similar drawing. Such plans were seldom corrected as conditions in the field made a necessary change from the original layout. In some cases, unfortunately, no record whatever has been kept, the foremen or others relying upon their memory as to whether the mains ran down the center or on one side of the street.

Records in Relation to Other Utilities

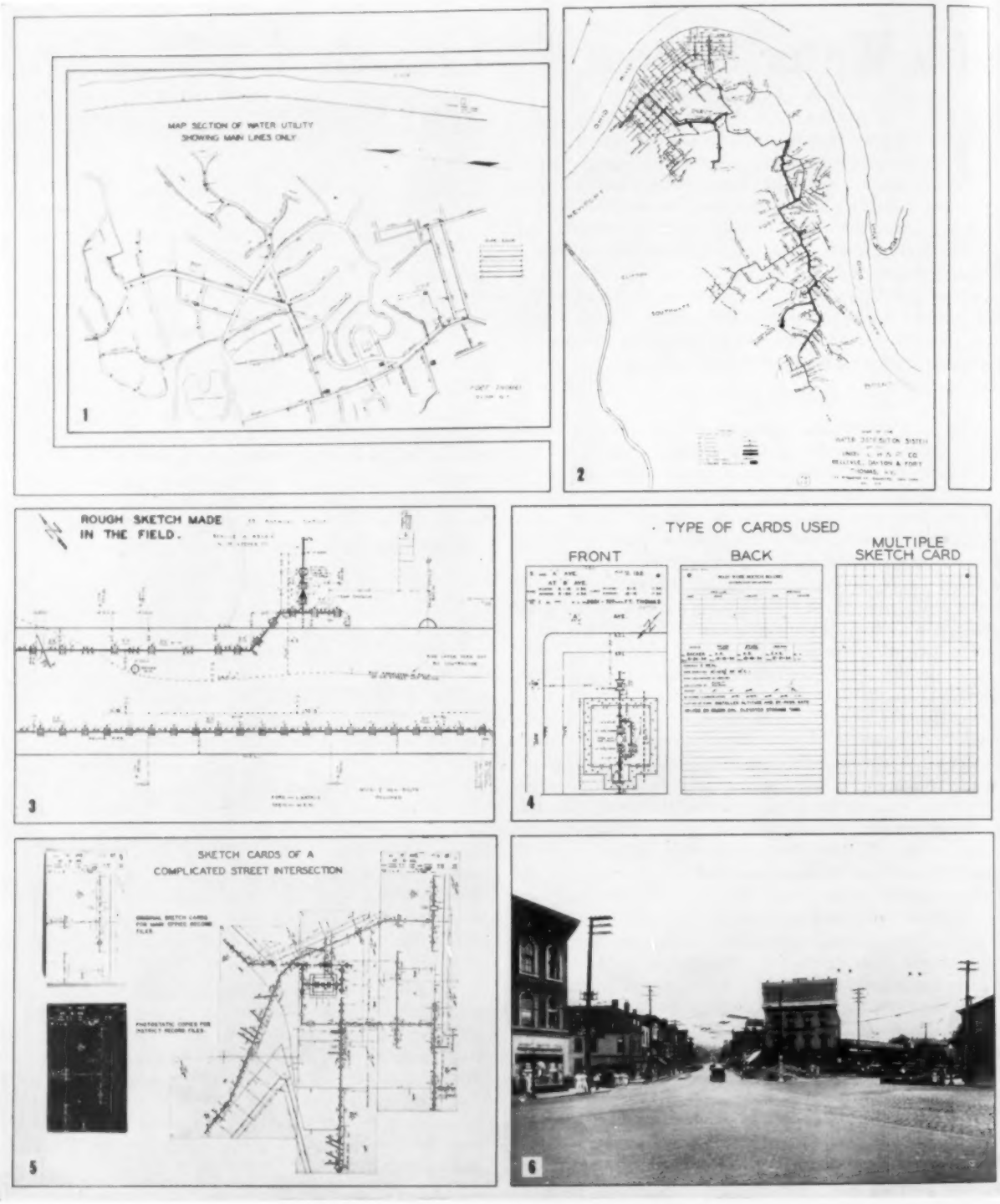
In the last twenty years, the congestion of utility structures has made records of underground structures in city streets extremely important. It has been necessary to plan well in advance just where water pipes and other subsurface structures were to go, and then after the pipes were in the ground to make permanent records so that they could be easily located from the surface. This saves promiscuous tearing-up of paving and useless blocking of traffic when digging for a main.

Initiating the Records

The rough work for such sketch records is done by a timekeeper, who, besides doing that work and acting as clerk for the gang foreman, in his spare time makes sketches of the mains as laid. Nearly all these timekeepers are active young men, most of them studying at night school or colleges in the vicinity. The engineering and construction training is very helpful to them. The rough sketches are made right on the job, and measurements are taken in detail in the ditch and placed on as many pieces of cross-section paper as are necessary. Some of the young men work on the rough sketches at home in their spare time, making them in a final neat form. Each tries to compete with the others to make his own sketches the best, since such duties are known to be steps in the promotion scheme in our utilities. The third illustration shows one of the rough field sketches as sent by the District Superintendent to the drafting room after the job was completed.

In the drafting room, the final cards are prepared by the draftsmen from these sketches, watching for any defects in measurements, sketching, angles of streets, etc., and later the final cards are re-checked by the chief draftsman. Any detailed records for accounting purposes are made at this time from the construction sketches, these records being in addition to the material orders and records already available at the storeroom when materials are issued for construction.

The final construction records as produced in the drafting room start with the Number 1 card, shown in the fourth illustration, "Type of Card Used." Different colors and codes are used for new and old water and gas mains, electric and telephone ducts, sewers, manholes, abandoned and removed pipe, and for bell-and-spigot pipe, hub and flanged valves, Dresser couplings, split and solid sleeves, etc. When the sketch record is so large that it cannot be placed on one card, any number of Number 2 cards are



EXAMPLES OF CARD RECORDS DISCUSSED IN THIS ARTICLE

1. A sectional layout of streets and highways in Fort Thomas, Ky., made to an original scale of 200 feet to the inch. 2. Diagrammatic layout of water mains by sizes to a smaller scale, giving a complete view of the system at a glance. 3. A rough field sketch made by a timekeeper with some technical training. 4. The front and back of a Number 1 card produced in the drafting room from the field sketches. At the right is shown the type of card used for multiple sketches. 5. A set of cards used in the multiple card system, showing work at an important and busy intersection. This illustration shows a group of cards clipped together for filing, a photostat copy for the district office, and a group of cards laid out and matched up to give a complete picture of the intersection. 6. Surface view of the intersection shown in the diagram in illustration 5

used. Many jobs require only one card, but complicated and long projects require several. The largest sketch record involved a 7-mile job, for which 85 cards were used. The cards can be placed together at any angle necessary to make a complete sketch of a long project continuing through several streets. The fifth and sixth illustrations show respectively a set of cards used in the multiple card system and the surface conditions at this point. At the left of the illustrations are the original cards clipped together, and below that the photostat duplicates for the files. When it is desired to get any information from the sketch record, the cards are laid out and matched up to make a complete picture, as shown at the right. All kinds and types of underground structures were encountered on this particular job, and these conditions are recorded by the various codes and colors. Because of the great traffic hazards at this particular location, four tunnels were built.

All records are kept in duplicate—one set in the main office, and a duplicate set in the local district. This duplication provides for immediate availability of detailed information in the district and also protects against fire hazards and possible complete loss of records. The photostat copies contain all the color details.

The photostat copies in the district offices are kept in a tub file, using alphabetical letter and street name indices.

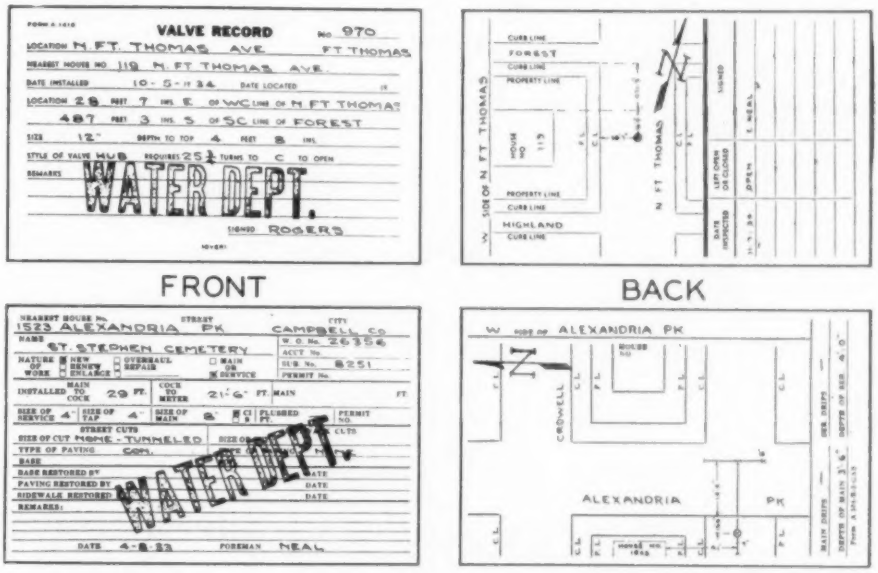
The sketches along any one street are filed according to house numbers, so that it is possible to locate, for example, the 4,800 block sketches without going through all the sketches filed for that particular street. These sketches are used in the office, and frequently the field parties call the office on the telephone and secure detailed information concerning pipe locations. No sketches or other records are ever taken out of the office, and strict disciplinary action has prevented losses of records.

As new construction is completed or changes are made in the systems, the general maps are changed to keep them up to date. This is the responsibility of the chief draftsman and his men. An effort is made to rotate the timekeepers from job to job, and at intervals they are taken into the drafting room for periods of duty so that they may be fully informed as to any changes in the system. This also prevents them from going stale on their particular jobs.

Valve and Service Installation Records

When any new valves are installed, a valve record card, as illustrated, is made out. This record shows the exact location, size, type, number of turns required to open, etc., and on the reverse side is a place for a sketch which is made to show proper dimensions and data for the office files. Duplicates are kept in the districts. It should be noted that space is provided for a record of the opening and closing of the valves. This is particularly valuable on water properties where more or less false pressures are established by partially closing valves in low districts and re-routing water from the regulators so that adequate pressure may be maintained in the hills.

In serving consumers, our companies run the service pipes from the main to the curb, and for each service a service card record is made, as shown at the bottom of the last illustration. This card gives complete information as to location, size, etc., as well as recording the type of paving. On the reverse side space is available for the timekeeper's sketch. This sketch makes it possible for a crew to go to the house and immediately locate the service and curb cock without unnecessary digging. Duplicates of these cards are kept in the districts.



VALVE RECORD CARD AT TOP AND SERVICE RECORD AT BOTTOM

Conclusion

Every water department or water utility can well afford to make the necessary expenditures for the installation of a proper record system of its underground properties, and should include in its budget the funds to keep such a system up to date. We are able to locate mains and services within 1 inch where the new record system has been installed. This saves thousands of dollars yearly in digging and paving expenses, particularly on maintenance work, and where water-main cleaning is under way.

The savings to our customers in reducing delays when breaks in mains or other troubles occur cannot be calculated in dollars and cents, but are of great value in keeping the customers satisfied and giving them better service.

ACKNOWLEDGMENT.—From a paper read at the 1935 convention of the American Water Works Association, in Cincinnati, Ohio.

Street-Cleaning Methods, Portland, Maine

Hand Cleaning by Patrol Men and Patrol Crews, and Sweeping by Machines

By **EDWARD M. HUNT**
Commissioner of Public Works

IN Portland three methods of street cleaning are used. The principal retail business and residential paved streets are cleaned by patrol men, who are on duty during the working day from 7 A. M. until 5 P. M. A certain district is assigned to each of these men and he cleans it by sweeping with a hand broom, putting the material that he collects in a can on wheels, which he keeps along with him. Each man has several cans, and when one is filled he sets it on the curbstone in a convenient place and takes another one to use. A truck makes the rounds of the patrol cleaners' routes and removes the picked-up material from the cans regularly each day for disposal.

The secondary business and residential streets, some of which are paved and some unpaved, are cleaned by a crew of 20 to 25 men, in charge of a foreman. These men use hand brooms and follow a route, so that the streets are cleaned at intervals corresponding to the amount of dirt that accumulates; that is, the dirtier streets are cleaned oftener than those which do not accumulate so much dirt. The sweepings are gathered into piles by the crew, using hand brooms, and are picked up by a truck, which operates with the sweeping crew.

The smoothly paved streets are cleaned by a pick-up motor sweeper, with two gutter brooms and pneumatic tires. It operates from 9 P. M. to 6 A. M. and covers all the smoothly paved streets in the city, including those which are covered by the patrol cleaners. The sweepings are deposited at convenient places and are picked up by a truck.

No really satisfactory way has been discovered for handling the parked-car nuisance in Portland as it affects the cleaning of the streets. Street cleaners sweeping by hand can work fairly effectually around parked cars. The motor sweeper works in the latter part of the night, when the number of parked cars is lowest.

Catch-Basin Cleaning

There are 2,234 catch-basins in the city. The standard basin is 8 feet deep below the curb line, circular in plan and 4 feet in diameter. The outlet is about 4 feet above the bottom of the basin. The basins are covered by a cast iron frame and cover. The opening in the frame, through which the basin is entered, is 22 inches in diameter. The catch-basins are cleaned by men with buckets and ropes. One man goes into the basin and fills the bucket, which is hauled up, and the material removed is deposited in the watertight body of a truck. The catch-basin cleaning crew consists of four men and two trucks, in charge of a foreman. The material removed from the basins is carried by the truck to some suitable place for disposal.

Increased Waste Incineration at Miami

By **WILLIAM SYDOW**
Director, Department of Public Service, Miami, Fla.

DURING the ten months ending May 1, 1935, there was an increase in tonnage of garbage and trash collected in Miami, of 26 per cent, the exact figures being 42,165.53 tons as against 33,420.27 tons during the similar period of the previous year. The tonnage of garbage and trash destroyed at the incinerators during the same ten months increased 28 per cent over the similar period last year, the figures being 70,144.41 tons as against 54,632.88 tons.

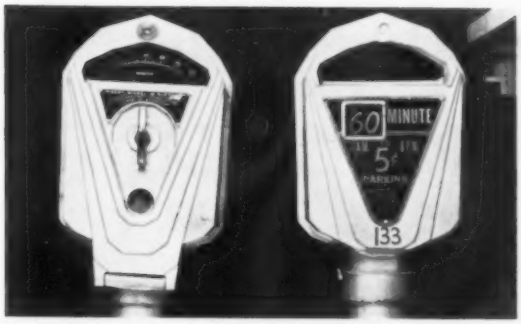
The tonnage of garbage and trash destroyed at the incinerator exceeds the amount collected by the trucks of the city of Miami, the difference in tonnage being that delivered to the incinerators by trucks from the cities of Miami Beach and Coral Gables and by private trucks from business concerns in the city of Miami. The income from the city of Miami Beach for incinerating its waste approximates $10,000 per year, and the income from the city of Coral Gables is $2,400 a year.

As a result of the incinerator operations, the amount of ashes hauled from the incinerators and deposited in pits increased 46 per cent over the previous period, the figures being 23,776.32 tons during the past ten months, compared with 16,903.08 tons during the similar period of the previous year.

In addition to the ordinary collection of garbage and trash, the Division of Municipal Wastes picked up 9,526.28 tons of tree limbs, lawn clippings and general rubbish during the ten months reported, in comparison with 7,394.43 tons during the similar period of the previous year, an increase of 29 per cent.

The cutting of weeds along curbs, gutters and sidewalks was reduced 47 per cent during the ten months reported, because it was necessary to transfer men from this type of work to help in the collection of garbage and trash. This was made necessary by limitations of the budget and by the greatly increased population, accompanied by increased tonnage caused by the 60 degree weather in December and the drought later. These climatic difficulties brought about greatly increased pruning of private property shrubbery and plant life which had been killed by the cold and the drought, and hence materially enlarged the tonnage to be hauled. The mileage of weeds cut along the streets during these ten months was 767 miles as against 1,451 miles during the similar period of the previous year.

Parking Meters in Oklahoma City



DURING the last few weeks a great many municipalities have been watching Oklahoma City's effort to solve the over-time parking problem by the use of a new meter conceived and manufactured locally.

The accompanying photographs show the essential features of the plan. First of all, the curbs in the parking blocks of the downtown area are marked off in 20-foot lengths, with a meter mounted 4 feet high commanding each of these intervals. At present there are 200 meters, with the possibility of 1,000 later. The driver cruises until a space is discovered, pulls in and deposits a nickel in the meter. A green indicator then rises and remains in view for the legal parking period, the meters being adjustable for a range of ten minutes to two hours. One motorcycle patrolman can inspect the entire area.

The attitude of the public is indicated by a first day's take averaging 50 cents per meter, despite the fact that only 20 per cent of the area was equipped and all the rest of the area was free as usual. The legality of the city's parking-meter ordinance was sustained in District Court on July 24, and the case may be carried to the State Supreme Court.

The Dual Parking Meter Co., Oklahoma City, will install these meters without cost to a city, taking all receipts until the meters are paid for and become the property of the city free and clear.

Chief of Police John Watt stated on July 18:

"These meters have been installed for only two days and we cannot give you any particular comments as to the reaction of the citzens at this time; however, we believe that they are going over in a big way. They are placing the checking of over-time parking on a mechanical basis instead of on the officers. They are going to make it easier for the average citizen to find a parking place, easier for him to park and get out of this space.

"These parking meters were not put in with the idea of revenue. The only tax is a 5 cents charge, which goes toward paying for police regulations. In the course of time, however, they will probably give the city a revenue of approximately $100,000 to $125,000."

NO MORE INJURED BUMPERS AND FENDERS

A 20-FOOT STALL FOR EACH CAR PROVIDES ROOM FOR ENTERING AND LEAVING

Collecting Delinquent Sewerage Service Rates, Monmouth, Illinois

By WALTER W. NEWLUND
Kinsey Engineering Co.
Pekin, Ill.

THE city of Monmouth is constructing sewerage improvements consisting of extensions of outfall sewers and a complete activated sludge sewage treatment plant. The project is being financed in part by a PWA grant, and the balance by issuance of sewer revenue bonds payable from the revenue derived from the operation of the sewerage system.

An act of the General Assembly of the state of Illinois, commonly known as the "Sewer Rental Act," provides for the establishment and collection of rates and charges for sewerage service from the users of a sewerage system. The revenue bonds issued under this act constitute a lien against the plant revenues, and delinquent rate charges become liens against the real property served.

Collection of delinquent service charges by foreclosure of liens is at best a complicated and unsatisfactory method of collection. The method of assuring collection of sewerage service charges adopted by the city of Monmouth was conceived by E. W. McKinnon, Mayor, and W. M. Bardens, Associate Attorney. This method, which is outlined herein, has so much merit from the standpoint of equity, workability and simplicity that the writer feels its explanation will be of interest to the governing bodies of many municipalities.

Discounts Encourage Prompt Payment

The city has for many years owned and operated its water-works system. In accordance with common practice, prompt payment of water bills is encouraged by discounting bills paid by a certain date. Refusal to pay for water service of course can result in loss of further water service to the customer. Applying the discount method of billing for sewerage service would encourage prompt payment of sewerage charges. However, the enforcement of collections in the event of refusal to pay would still be dependent upon either blocking the sewer connection (with resultant sanitary and legal complication), or suit for foreclosure of the lien.

Making It Cheaper to Pay One's Bills

A final plan was evolved having as its basic principles that the combined net charge for both water and sewerage service to any customer is always less than the gross charge for water service only, and, further, that discounts would apply only on the total of all bills for utility service rendered by the city.

The steps necessary to make this plan effective were as follows:

1. A new water rate ordinance was passed which set up rates and charges for water service but made no provision for discounting bills.
2. A sewerage rate ordinance was passed which set up rates and charges for sewerage service but made no provision for discounting bills.
3. An ordinance was passed which provides for a discount of 33 1/3 per cent on the aggregate of all bills owed the city for utility service if paid prior to certain dates.

Since, in most instances, the sewage load contributed is proportional to the water consumption of the sewer users, the charges for sewerage service were made proportional to the water consumption of the user.

The following table illustrates typical monthly bills for water and sewerage service for an average consumption of 3,000 gallons of water, and for a large consumption of 40,000 gallons of water.

	Water Service		Sewerage Service		
Gals. of Water Used	Rate per 1,000 Gals.	Charge	Rate per 1,000 Gals.	Charge	Combined Service Charge
3,000	$0.57	$1.71	$0.27	$0.81	$2.52
			Discount @ 33-1/3%		.84
			Net bill		$1.68
10,000	$0.57	$5.70	$0.27	$2.70	
10,000	0.54	5.40	0.24	2.40	
10,000	0.51	5.10	0.24	2.40	
10,000	0.42	4.20	0.21	2.10	
		$20.40		$9.60	$30.00
			Discount @ 33-1/3%		10.00
			Net bill		$20.00

As shown by the foregoing table, the net bill for combined service is always less than the gross bill for water only. Thus it is more profitable for the consumer to pay both bills and take advantage of the discount than to pay the water bill only and lose the discount.

Incidentally, it may be of interest to note that the combined charge for both water and sewerage service in the city of Monmouth is only 10 per cent in excess of the previous rate for water service only. This is due mainly to the fact that efficient operation of the water plant has enabled the city to reduce the net water rates approximately 25 per cent in the new rate schedule.

Playgrounds Aiding Police in Reducing Delinquency

HOW Los Angeles municipal playgrounds are aiding police officials in reducing juvenile delinquency in the city was explained in information given the city Playground and and Recreation Commission on July 15 by Captain W. M. Littell and Lieutenant J. F. Reed, in charge of the Hollenbeck Heights division of the Los Angeles Police Department.

According to the police officials' records, approximately 1,800 youngsters of the delinquent or pre-delinquent class are now being introduced to wholesome sports and recreational activities at the six municipal playgrounds of the Hollenbeck district, where they are required to check in regularly with the directors in charge.

This program, together with a cooperative arrangement between police, parents, and civic organizations, has helped in curtailing delinquency more than 50 per cent during the past two years, according to Captain Littell, and Lieutenant Reed declared that there were now very few gangs of youngsters on the streets in the Hollenbeck area, the youths being found instead on city playgrounds engaged in wholesome play.

The NRM Program of Street Paving and Resurfacing in Indiana

By **M. R. KEEFE**
Chief Engineer,
Indiana State Highway Commission

INDIANA'S State Highway Act provides that in cities having a population of 3,500 or more, no state funds may be expended to improve the streets over which state roads are routed. It thus becomes the duty of the municipalities to take care of the streets traversed by state highway routes, and the burden, during the last few years, became so heavy that little or no maintenance was carried out by the cities. Under these circumstances the roughest riding parts of the state highways lay within the borders of cities and towns above 3,500 population. After careful study of conditions existing in Indiana, it was decided by the Highway Commission to assign 47 per cent of the Federal NRA highway funds to National Recovery Highway (NRH) projects, 48 per cent to National Recovery Municipal (NRM) projects, and 5 per cent to National Recovery Secondary (NRS) projects. The projects selected were located in 68 of the 92 counties of the state which complied with the regulations requiring the work to be distributed in at least 75 per cent of the counties.

Preparing the Program

In preparing the NRM paving program in Indiana, the District Engineer in each of the six districts was asked to recommend the projects in his district which he deemed the most necessary for improving the Federal Aid routes through these cities, all of which were to be located in cities having a population of 3,500 or more. These recommendations were then given a field inspection by a member of the Commission accompanied by an engineer from the central office. Each of the three Commissioners visited the cities of two districts, and the District Engineer's recommended program was cut to come within the assigned 48 per cent of the grant, which amounted to $4,818,184.

When the field inspection of proposed projects was carried out by members of the Commission, an effort was made to contact the officials of the cities and towns, so that a complete understanding was arrived at as to what improvements would be constructed by the State Highway Commission of Indiana, and the conditions under which the work was to be carried out.

The Bureau of Public Roads regulations required that the cities and towns execute an agreement with the Highway Commission which provided that the Commission would submit certain paving projects to the Federal Government and recommend their approval, provided that the municipalities agreed to request the project to be constructed and also agreed to appropriate yearly the necessary funds for the maintenance of the pavement and to carry out such maintenance.

In addition, the Highway Commission required that an ordinance be passed embodying the above requirements, as well as additional provisions which gave the Commission some authority over the parking regulations, maintenance of "stop and go" lights, cutting into the improved pavement, and the establishing of gasoline pumps, signs, etc., in the sidewalks along the line of the improvement.

Since state highway funds could not be used within the limits of cities, and since the NRA grant specifically provided that right-of-way could not be purchased from Federal funds, it had to be thoroughly understood that the municipalities necessarily had to provide all needed rights-of-way.

The NRM program, as submitted and approved by the Federal Government, provided for the construction of 114 projects, located in 60 cities and distributed among 47 of the counties of the state. The 114 projects consisted of 6 grade separations, 7 separate contract bridges, and 101 paving projects. The total estimated cost of the program was $4,506,474. More than half of the NRM appropriation was programmed for four of the largest cities of the state and for the cities of Lake County.

Carrying Out the Program

In constructing the NRM projects, 34.65 miles of streets were paved with concrete, 30.47 miles with bituminous surfacing, and 9.52 miles with a combination of concrete and bituminous paving, making a total of 74.64 miles of streets improved in the program.

In carrying out the program, the following quantities of paving, with curbs and gutters, were constructed:

Kind of Paving	Sq. Yds.
Unreinforced concrete	147,513
Reinforced concrete	601,132
Rock asphalt	523,783
Bituminous concrete	127,260
Bituminous coated aggregate	21,242
Asphaltic macadam	18,735
Processed rock asphalt	10,495
Brick surfaces relaid	5,174
Total of new and relaid surface	1,155,336
New concrete base	88,815
Waterbound macadam	9,431
Total base courses	98,246

Curb and Gutter	Lin Ft.
Type B curb constructed	206,098
Special concrete curb	19,353
Concrete step curb	664
Integral curb	103
	226,218, or 42.8 miles
Curb reset and reconditioned	17,510 lin. ft. or 3.3 miles
Concrete gutter constructed	77,988 " " or 14.8 "
Combined curb and gutter	85,648 " " or 16.2 "
Total all types of curb built	407,364 " " or 77.1 "

Eighty-five per cent of the resurfacing was placed on old brick pavements. A majority of the resurfacing projects required widening, which in most cases was carried out with concrete.

It was decided at the beginning of the program that no paving would be constructed on streets having a width of less than 36 feet. This minimum width of 36 feet would provide two traveling lanes of 10 feet each and allow

parking space on each side of the street. In several cities widths of less than 36 feet were paved, but only on the condition that parking ordinances be passed preventing parking on one side.

In three cities the bituminous coated binder courses over old brick were bid to use tar. These three jobs were in Plymouth, Lebanon and Rochester, where a total of 94,822 square yards of tar binder with rock asphalt wearing surface was constructed.

Unusual Conditions in South Bend

In South Bend the city officials requested that their allotment be used on one project, the separation of the Western Avenue crossing and the main line of the New York Central Railroad. This project had long been a dream of the city and a contract between the city and the railway company had been in existence for a number of years, but had never been put under construction owing to lack of funds. The railway company had prepared a design for an underpass and had purchased the superstructure steel, which was in storage in their South Bend yards. The city had purchased all the necessary right-of-way, and buildings had been moved for the construction of this underpass. The Highway Department agreed to proceed with the project, and work is now under construction.

The first of the NRM contracts was let in November, 1933, and weekly lettings followed throughout the winter and spring months. A few of the contracts were delayed throughout the year owing to the rights-of-way not being delivered by the cities, and the inability of municipal authorities to get an agreement from the street-railway lines for rehabilitation of their tracks. The existing financial condition of most of the street-railway companies delayed the projects in the Calumet District and other cities so that the completion dates had to be advanced several months. In the Calumet District the delay was most serious, for the work necessary to be carried out by the railway had to be paid for by the fares collected daily. This amounted to less than $500 daily, and the track work dragged along throughout the summer.

Expansion and Cooperation

The NRA program combined with the state construction threw a heavier load on the department of operations than it had ever been called on to handle. It became necessary to expand the road design department, which was done by renting additional quarters and equipping an overflow office. The construction department, confronted by the large program, had to expand its field supervising forces practically over night, but this was accomplished in a praiseworthy manner. Experienced engineers and inspectors to supervise bituminous resurfacing work on the NRM program were difficult to employ. A field supervising engineer trained in bituminous work was assigned to the bituminous contracts, and it was found necessary to train the larger part of the engineers and inspectors for this class of work. This was accomplished by much hard work and long hours, and the personnel of the Highway Department feel that a high standard has been set for bituminous and concrete street paving work.

The hearty cooperation of Indiana contractors was necessary for the carrying-out of our NRA program, and this cooperation was evidenced not only on the construction, but on design problems as well.

ACKNOWLEDGMENT.—From a paper presented at the Twenty-first Annual Purdue Road School.

Trend Toward Electric Power for Pumping

By **PAUL HANSEN**
Greeley and Hansen, Sanitary Engineers, Chicago, Ill.

THERE has been a marked trend in the last few years toward the use of electric power, even in water-works pumping stations of relatively large size. A number of factors have created this trend, as follows:

1. The increase in the number of power plants and the improvements in the network of power lines have created a reliability of service that makes shut-downs a rarity and then but momentary. Such shut-downs can readily be tied over as a rule by moderate elevated storage on the distribution system.

2. Centrifugal pumps have been developed with such high efficiency that purchased electric power compares favorably with the most efficient steam pumping machinery.

3. Electrically operated pumping stations are clean, neat, and inconspicuous, thus permitting their location within or adjacent to residential districts.

4. The development of the internal combustion engine has created a compact, economical, and reliable stand-by source of power, thus adding to the security of using transmitted electric power.

5. Electrically equipped stations require a small personnel for their operation and maintenance.

6. Centrifugal pumps require relatively little repair work. Generally speaking, when they fail to maintain their efficiencies or otherwise get out of order, it is feasible to obtain any parts quickly or even an entire new pump promptly and at relatively small cost from the factory.

7. Electrically equipped pumping stations lend themselves to automatic or remote control, so that it is feasible to build stations of relatively large size which require no attendance except for periodic inspection.

Within recent years much more attention has been given to the piping of pumping stations. A carefully designed modern electrically operated pumping station is equipped with a loop arrangement for the discharge piping so that if any pump, any piece of pipe, or any valve is out of service, it is still possible to operate most of the pumps. Attention is also given to multiple connections to the distribution system so arranged that if any pipe or valve fails, water can always be delivered in reasonable quantities from the pumping station into the distribution system. In cases where the water comes to the pumping station through a pipe line, suctions of the pumps are also looped, but, generally speaking, adequate security can be obtained by providing independent suctions for each pump, or at least duplicate suctions for a group of pumps.

—From a paper presented before the International Association of Public Works Officials.

Planning to Prevent Soil and Beach Erosion

WARNING that great destruction of both private and public property is threatened through failure to control erosion on the unsurpassed beaches of New Jersey, is sounded in a statement issued July 24 by the New Jersey State Planning Board from its Trenton headquarters.

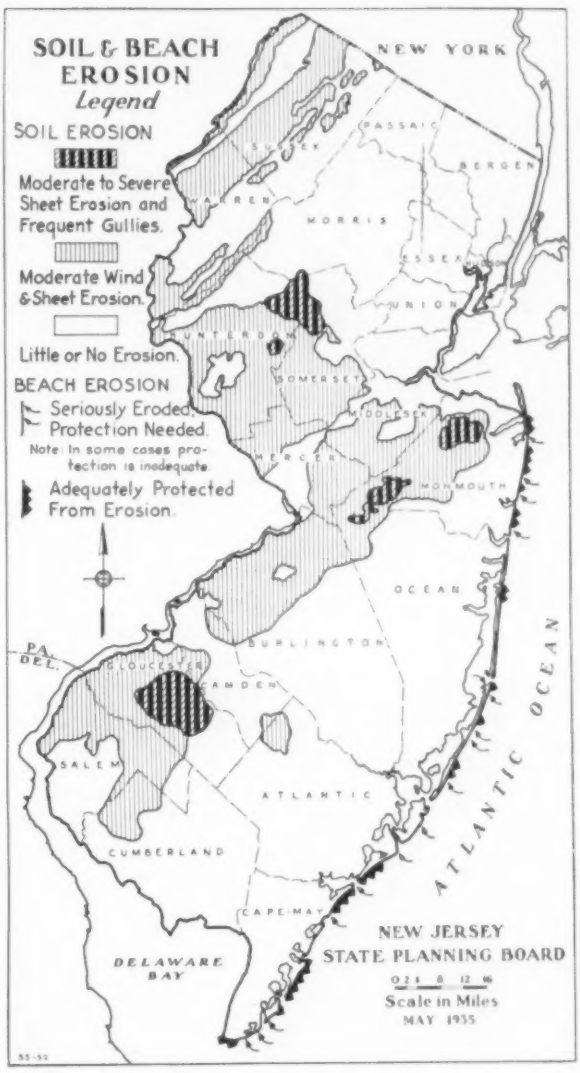
Both recreation areas and communities on the coast are in jeopardy, while injury to fisheries and other such commercial enterprises and the disruption of rail and highway communication along some stretches of ocean front is possible, it is said.

Occasional severe storms and strong currents, usually set up by storms and generally drawing diagonally in a northwestern direction, render over 75 miles of the 125 miles of the state's coast line from Sandy Hook to Cape May subject to more or less serious beach erosion, involving extensive and costly protection, including the building and maintenance of bulkheads, seawalls and jetties, according to the Board. Some form of protcetion has been established for about 40 miles of the threatened area.

In the matter of soil erosion, generally, the Board says that only a reconnaissance survey of the extent of damage is as yet available. The relative condition and rates of erosion are based upon the very limited field sampling and observations made by the State Agricultural Experiment Station and the Federal Soil Conservation Service, supplemented by the field studies of the State Planning Board. The statement continues:

"Soil erosion is a problem confined to cultivated agricultural land. The wooded areas of the state, therefore, present no problem. The most extensive area of serious erosion is in the Piedmont District of Hunterdon and northern Mercer and southern Somerset Counties.

"In the state as a whole, a total of approximately 2,350 square miles, or 1,500,000 acres, show evidence of moderate erosion. About 250 square miles, or 160,000 acres, have suffered more severe damage and have reached the more advanced stage of erosion, indicated by frequent gullies and critical impoverishment of the soil.



Largest Community Recreation Expenditures Ever Recorded

THE number of American cities reporting organized public recreation shot up last year from 1,036 to 2,190, employed leaders increased from 28,368 to 43,419, and expenditures mounted from $27,065,854 to $41,864,630, according to the findings of the year book of the National Recreation Association.

The expenditures in 1934 were the largest by 3 1/3 millions ever recorded for community recreation. "These phenomenal increases over 1933 can be attributed largely to the allocation of emergency relief funds to recreational projects," the year book states. "However, although more than half the 1934 expenditures were from relief funds, they supplemented rather than took the place of regular local appropriations from tax sources," it continues.

The application of relief money to recreation provided facilities and activities for hundreds of thousands of children, youth and adults otherwise idle in their spare time. Outdoor playgrounds increased 40 per cent, indoor recreation centers 55 per cent. and recreation buildings 33 per cent. Arts and crafts, athletics, folk dancing, play production, music, hiking and swimming were the recreations most frequently listed by the cities in which programs were carried on exclusively under emergency recreation leaders. More than 2,000 outdoor playgrounds and 1,506 indoor recreation centers were conducted in communities which otherwise would have had no organized recreation program.

The total number of separate playgrounds, play streets, athletic fields, baseball diamonds, golf courses and other recreational areas was reported as 20,641. Tennis courts increased to 10,047, and ice-skating areas to 2,156. The seasonal attendance at outdoor playgrounds exclusive of other areas was 300,000,000 as compared with 234,000,000 in 1933. At indoor centers it increased 15,000,000 to a total of 75,000,000.

Ninety per cent of the emergency funds applied to recreation projects was expended in cities already having established recreation systems, and 75 per cent of the workers paid from such funds served in these cities. The authorities reported by the year book as administering public recreation were principally recreation departments, park departments, boards of education, and relief agencies. Of these, recreation departments conducted most of the recreation service.

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WHEN you call a telephone number on the other side of town, you are making an important purchase. You say in effect —

"Give me the use of some miles of wire in a cable under the street, a section of switchboard and all the other equipment needed in the central office. I shall need one kind of current to carry my voice and another to ring the bells that signal the other party. I may need the services of an operator or two. I want all your equipment to be in perfect working order so that my call is clear and goes through without interruption. I would like this all arranged to connect me with my party instantly — and at a cost of a nickel or so."

Telephone people are asked to do this millions of times a day and find nothing unusual in the request. But to do it at the price you pay for telephone service — in fact, to do it at all — has taken the most skilful and unremitting research, engineering and organization.

Telephone service in the United States is the most efficient, dependable and economical in the world.

More than one-half the telephones in the world are in the United States although this country has only 6% of the world's population. The Bell System has brought the telephone within reach of all.

BELL TELEPHONE SYSTEM

FORWARD STEPS

Reported by
Municipal Officials, Chamber of Commerce Executives, and Others

"What Can I Do in the Summer Vacation?"

WICHITA, KANS.—One of our greatest by-product wastes in this country is the vacant school buildings with their shops, gymnasiums, auditoriums, art and dramatic rooms, and laboratories, in the summer. Yet a greater loss is represented by the millions of idle boys and girls who have opportunity for neither work nor play during this time. Wichita has developed a plan that brings these two minuses together and makes a combination that is a positive gain.

About $6,500,000 invested in school buildings in Wichita, 25,000 children, and 700 teachers—many of them largely idle during 3½ months each year—and, challenging them, the joys and activities of the new interpretation of "recreation," all available in the dry swimming pool, the idle tennis courts, and the locked rooms of the school buildings!

A new type of school was organized in Wichita last summer under the writer's direction. Work for credit was placed second to work for no credit. Courses were offered in art, dramatics, chemistry, band, orchestra, woodwork, electricity, swimming, tennis, golf, clothing and typewriting. No specific requirements were set up. Each pupil was free to chose his activities and to accomplish just as much as he desired. If a Scout camp or a short trip out of town was available, the absence caused no concern. Quality and quantity of work became a personal proposition to these children for—probably—the first time. No grades were given.

Along with non-credit work such subjects of the regular course as were demanded were offered. The non-credit work was twice as great as the credit courses.

The Board of Education permitted the use of the buildings and grounds free. Each pupil paid a fee of $5 for expenses and teachers' salaries. Nobody got rich. On the winter cost basis more than $4,000 worth of credit was completed. But would people pay money to send their children to school to do work and then get no credit for it? The children did not have to be sent; they came. More than 500 enrolled. Two or more of the four distinct objectives—recreational, cultural, exploratory, and academic—were realized through practically every offering in the eight weeks' session of 120 periods of one hour and twenty minutes each.

Swimming, tennis, golf, archery, baseball, and tether ball were the recreational courses. Practically every boy who finished the swimming course—a combination of instruction and play—was able to swim 60 feet with one or more different strokes, and 65 per cent of the girls qualified. A large part of the group met the test of more than half of the 39 accomplishments for swimmers. Band, orchestra, dramatics and art were the leaders in the cultural field. More than 200 musical instruments owned by the Board of Education were brought together to be used by pupils who did not own instruments. Advanced work in band and orchestra was given, and 90 beginners took the first course. An outdoor evening concert was given by the advanced orchestra and band. The dramatics class gave two plays to the entire school and the patrons. Sixty boys and girls did work in art; 93 in woodwork, making everything from toys and magazine racks to canoes and kayaks; 95 took typewriting; 45 boys studied the radio and other mysteries of electricity; 40 boys and girls studied chemistry.

This Summer Recreational School offered the opportunity of exploration—the finding out enough about a subject to be able to judge wisely before making a final choice in the educational or vocational fields. Here was the equipment for solving some of life's problems, and here was practice in the use of this equipment. All this was made available in Wichita during the summer of 1934, and 1935 shows the same proportions and interests.

FRANK K. REID,
Principal, Roosevelt Intermediate School,
Wichita, Kans.

A Profitable Lake Shore Improvement

LAKE GENEVA, WIS.—This city of 3,000 is continuing an improvement project which has added much to the beauty of the community in the last few years and has also been an asset to the local business men.

Lake Geneva is one of the most popu-

IN THE SUMMER WOODWORKING SHOP, WICHITA

SWIMMING LESSONS, WICHITA RECREATIONAL SCHOOL

BLISTERING DESERT SANDS
22-TON PAYLOADS—CLOCKWORK SCHEDULES
...BUT THE TIRES NEVER COMPLAIN!

Long Hauls to Colorado River Aqueduct Prove Tough Test of New Goodrich Tire Invention

At a siding in southern California, heavy truck and trailer units take on loads of 22 tons of bulk cement. Then from below sea level—up stiff grades through canyons and on across the desert—goes this modern caravan. Bound for the Colorado River Aqueduct. One hundred and twelve miles a trip. Four trips a day. With temperatures as high as 130°. Sands are blistering hot. Loads are heavy. There's plenty of braking.

It's all in the day's work for the Southern Pacific Motor Transport Service. And it's just another job for Goodrich Silvertowns!

New Tire Invention

Everywhere these new Triple Protected truck tires are setting new records for low cost mileage—for freedom from sidewall "Failure Zone" breaks.

Tires that have proved themselves in the California deserts can handle your job better, too. Don't put off getting the whole story of the amazing new Goodrich tire construction principle from your local dealer.

Triple Protected Silvertowns actually check 80% of all premature failures! Here's why:

1 **PLYFLEX**—a *new*, tough, sturdy rubber material with greater resistance to stretch. A layer of Plyflex in the sidewall prevents ply separation—distributes stresses—checks local weakness.

2 **PLY-LOCK**—the new Goodrich way of *locking* the plies about the bead. Anchoring them in place. Positive protection against the short plies tearing loose above the bead.

3 **100% FULL-FLOATING CORD**—Each cord is surrounded by rubber. With ordinary cross-woven fabric, when the cords touch each other, they rub—get hot—break. In Silvertowns, there are no cross cords. No friction.

This expensive development costs you nothing extra. You pay no more for Silvertowns than for other standard truck tires.

FREE! **44-PAGE HANDBOOK FOR TRUCK OPERATORS**

Every truck owner, every driver should have this big 44-page handbook. Gives commodity weights, tire load capacities, inflation schedules, dual spacing chart, load analysis and other useful information. No obligation. Write for free copy. Dept. T-99, The B. F. Goodrich Company, Akron, Ohio.

Goodrich *Triple Protected* Silvertowns

SPECIFY THESE NEW SILVERTOWN TIRES FOR TRUCKS AND BUSES

MUNICIPAL RECREATION BUILDING AND SHORE VIEW, LAKE GENEVA, WIS.

lar lake resorts in the southern part of Wisconsin. Many wealthy families have lavish summer homes on the shores of the wooded, sparkling lake. But the lake shore at the spot where the city is located was for a long time an eyesore. Old bathing buildings and a decrepit dance hall stood there for years and were hardly an inducement to visitors to stop and spend time at Lake Geneva. Therefore, the city made a bold attack on the depression four years ago by beginning to beautify its lake front and by building a fine dance hall and convention headquarters at the lake.

The project cost $160,000 and employed mostly hand labor. There was plenty of local support for the work, for citizens realized that it was a fine thing for the city, and enthusiasm ran high. During the time the project was under construction, it relieved the unemployment problem considerably.

This large ballroom, called the Riviera, is rented to an outside individual who stages respectable dances, thus bringing the city considerable revenue. During the day, the ballroom is used for convention sessions. The city formerly had no place to hold large gatherings but now, with the new quarters, the community is attracting many large conventions, thus bringing business and popularity to the city of Lake Geneva.

Level with the lake are large, fine bathhouses, under the main building. Several boat dealers have offices in the building, and the dock space is rented to two boat transportation companies.

The work of beautifying the lake shore was continued, and was later taken over as a Federal project. Work is still going on, and Lake Geneva's shoreline promises to be one of the most beautiful in the country.

MARTIN FRANCIS,
Nashotah, Wis.

Washtenaw County's New Map and Directory

ANN ARBOR, MICH.—The new map and directory of Washtenaw County is the first part of the report of the Recreation Survey that has been conducted with FERA help under the Department of Landscape Design of the University of Michigan Planning Committee. It locates 58 places of interest, 12 sightseeing drives, 12 golf courses, and 7 hikes, as well as bathing beaches and canoe trips. It has been printed through the cooperation of the Road Commission, the Chambers of Commerce of Ypsilanti and Ann Arbor, the University, and the local School Board.

Mimeographed lists of the points of interest and the lakes were given out in the junior high schools in the spring and to the playground directors at the beginning of the summer, in order that the children might take some of the walks and drives outlined.

The Directory should have the following important uses:

1. It should help school children to know their county and take pride in it.
2. It should make driving more interesting. Many of the places listed are of international interest, but are little known to most.
3. Ann Arbor is a city of many conferences and conventions. Most of its visitors drive in. The Directory should cause them to linger a little longer and talk about the county afterwards.
4. To hotels, restaurants, rooming houses, oil stations, golf course and resorts, it should mean more business.
5. For present and prospective students, alumni and the general public, it should bring the realization that the University has a worthy setting.
6. To the general public it should bring through the realization of the many attractions of the county some increase in local pride of the sort that leads to public improvements and good government.

HENRY S. CURTIS.

Indiana Cities Buy Water Works and Gas Plants

INDIANAPOLIS, IND.—News items from various Indiana cities regarding their ownership of public utilities are of current interest.

The city of Indianapolis has purchased the Citizens' Gas Co., and is going to spend $1,500,000 for extensions and improvements. It is planned to purchase natural gas and mix it with manufactured gas. Halsey, Stuart & Co., of Chicago, have purchased the bonds.

A petition is being circulated for the city of Indianapolis to build a light and power plant to supply electric current for street lights, traffic lights, and for lighting city parks, libraries, schools, police and fire departments and all other city, state and Federal buildings.

The city of Vincennes has signed a contract to purchase the local water-works system from private interests, and the city of Greencastle has already bought its water-works system, at a price of $450,000.

P. J. MINCK,
Executive Secretary, Indianapolis Municipal League, Inc.

American Planning and Civic Association Formed

WITH Frederic A. Delano, of Washington, D. C., as President; Harold S. Buttenheim, of New York, Horace M. Albright, of New York, and Richard Lieber, of Indianapolis, as Vice-Presidents; George W. White, of Washington, D. C., Treasurer; Harlean James, Executive Secretary, and Flavel Shurtleff, Counsel, the American Planning and Civic Association was organized in Washington on July 1 as a result of a merger between the American Civic Association and the National Conference on City Planning.

The purposes of the new organization will include "the promotion of public understanding and support of national, regional, state and local planning for the best use of urban and rural land, water, and other natural resources; the advancing of higher ideals of civic life and beauty in America; and the safeguarding and development for the largest good to the people of natural wonders and scenic possessions and of national and other parks and recreational facilities."

In addition to the President, Vice-Presidents and Executive Secretary the members of the Board of Directors are:

Harland Bartholomew, St. Louis; Edward M. Bassett, New York; Alfred Bettman, Cincinnati; Mrs. Edward W. Biddle, Philadelphia; Louis Brownlow, Chicago; Marshall N. Dana, Portland, Ore.; Jay N. Darling, Washington, D. C.; H. Marie Dermitt, Pittsburgh; Clarence Phelps Dodge, Washington, D. C.; Earle S. Draper, Knoxville, Tenn.; A. P. Giannini, San Francisco; John M. Gries, Conover, Ohio; Henry V. Hubbard, Cambridge, Mass.; Charles F. Lewis, Pittsburgh; J. Horace McFarland, Harrisburg, Pa.; J. C. Nichols, Kansas City, Mo.; John Nolen, Cambridge, Mass.; Mrs. Franklin D. Roosevelt, Washington, D. C.; Samuel P. Wetherill, Jr., Philadelphia; and Robert Whitten, New York.

Annual meetings of the new association will be held jointly with the American City Planning Institute and the American Society of Planning Officials.

Chief C. A. Peterson, Englewood, N. J., Department of Police, at the microphone of his RCA Terra-Wave Police Radio Transmitter.

DEPARTMENT OF POLICE
OFFICE OF THE CHIEF OF POLICE

THE CITY OF ENGLEWOOD
ENGLEWOOD, N.J.

City Clerk
Scranton
Pa.

Dear Sir:

May 9, 1935

In July 1933 we installed the RCA Victor Ultra High Frequency transmitter and equipped five patrol cars with receiving sets. We have always had very satisfactory results with this type of police radio. It works equally well in all kinds of weather conditions and strong signals are received in any and all parts of the city.

We find that in using this ultra high frequency there is no interference, either in sending or receiving signals, with any other station and there are several in the immediate vicinity.

We have found that the cost of operation is much below the cost of our old signal type, i.e., telephone call boxes and signal horns and much more satisfactory. The only cost involved is for electric current used and replacement of tubes, which replacement amounts to about $50. per year.

I do not hesitate to recommend the RCA Terra Wave radio to any Police Department, basing my recommendation upon our actual experience with it.

Very truly yours

P/M

C. A. Peterson
Chief of Police

"I recommend RCA Terra-Wave to any police department!"

—*Englewood Chief of Police*

Sturdy dependability—freedom from interference with other police signals—low first cost and low operating cost—strong signals received everywhere in all kinds of weather! These are reasons why Chief Peterson of Englewood writes so enthusiastically to other cities. By superior performance in scores of towns and cities, Terra-Wave is winning increasing prestige among police departments.

And now 2-way communication doubles efficiency!

The new RCA Terra-Wave Mobile Transmitter becomes Public Protector Number One! This latest marvel of radio science strikes a death blow at Crime—because now radio cars communicate instantly with Headquarters, reporting direct from the scene of action.

You add this amazing development to your Terra-Wave system by simply installing the new 25-watt Mobile Transmitter in each of your radio cars. This fine, compact, rugged, low-cost equipment is the most sensational contribution to crime control since the introduction of RCA Terra-Wave to the police of America!

Sales and Service Representatives in Principal Cities

RCA TERRA-WAVE POLICE RADIO SYSTEM

RCA MANUFACTURING COMPANY, INC.—CAMDEN, NEW JERSEY

A Radio Corporation of America Subsidiary

What Walter Lippmann Regards as a Sound Program of Income Taxation

"THE American income tax system has become increasingly vulnerable and unsound since the war. In 1923 income tax returns were made by more than 7½ million individuals. By 1929 nearly half of these individuals had been exempted. In 1934 there were 15 states, represented by nearly a third of the Senate, in which less than a million dollars in income taxes were paid by individuals in each state. On the other hand, 10 states, represented by 20 senators, paid about three-quarters of the individual income taxes. Thus we have traveled far along the path where the political power to tax incomes is exercised by a great mass of voters who are immune to the taxes they impose. In respect to visible and conscious tax burdens we are moving rapidly toward representation without taxation.

"A sound program of taxation would have as its ideal the payment of some income tax by every voter so that every new expenditure would be reflected in the tax bill of every voter. It is not feasible to achieve this ideal completely. But it is possible to aim at it. Nor need it mean that citizens of small means would pay more than they now pay. The important thing is that they should pay *direct* taxes and should be *conscious* that they are paying taxes, and this could be done by lowering the exemption and substituting for the nuisance taxes a tax on small incomes.

"A measure which attacks the great fortunes at the top without at the same time broadening the base of all taxes is a measure to diminish the evils of plutocracy by encouraging the evils of demagogy. The immunity of great wealth and the irresponsibility of great masses are the two fatal diseases of republics.

"If a government is to be wise, it will recognize that those who have power to levy taxes on others shall at the same time have the obligation to tax themselves."

—WALTER LIPPMANN, *in the New York Herald-Tribune* of June 23, 1935.

New Provisions of Tax Assessing Laws

THIRTY-SIX of the 44 state legislatures meeting this year gave attention to the subject of tax assessing. Numerous general and many special acts were passed concerning it, according to the July issue of the *Assessors' News Letter*, issued by the National Association of Tax Assessing Officers.

One of the most unusual acts, in the opinion of Albert W. Noonan, Technical Director of the Association, was that passed by New Jersey for the purpose of keeping the tax assessor's office as far as possible from political influence. Heretofore, the laws of some New Jersey municipalities gave assessors terms of from one to three years, and "political" appointments and removals were reported to be frequent. The new law grants five-year terms, either appointive or elective. Greater efficiency, due to the opportunity for experience and avoidance of political pressure, is the hoped-for result.

The more than fifty laws represented in the 1935 legislation, as noted by the *Assessors' News Letter*, range from provisions to create a state tax commission to authorizing the exemption of real estate used for a manufacturing plant.

Among the new provisions are the California law that an official map should be made for each city, showing each block and parcel of land, and that the map, once approved, should be used for assessment purposes, property transfers, etc.; and the Florida law authorizing creation of municipal tax adjustment boards. Two states—North Dakota and Minnesota—created tax survey commissions to make studies of the tax structures, with an eye to revision and improvement.

Little trend is evident toward any uniformity in the tax assessing laws, comments Mr. Noonan. Especially is this true for the practice of exemption. This year a number of states passed laws containing more liberal provisions, while others put back on the tax rolls buildings owned by colleges and universities, and in some cases by religious institutions. A degree of standardization or unification on some aspects of tax assessing is an advantage that may become a necessity later, he observes, if there is to be complete fairness in the taxing system.

Recent City Manager Appointments

RICHARD A. DRAKE, former Assistant City Manager, has been appointed City Manager of Griffin, Ga. H. P. Powell, the former Manager, resumes his old duties as superintendent of the water and light plants.

Milford G. Farley has been appointed City Manager of Durham, N. C., and previous to that has been vacant since the removal of Carl H. Bischoff.

Robert W. Flack, for the past six years City Manager of Durham, N. C., and previous to that City Manager of Springfield, Ohio, was appointed City Manager of San Diego, Calif., on July 9. He will assume his duties August 1.

Clifford S. Fullerton, former Assistant City Manager, on June 22 was appointed City Manager of Painesville, Ohio, to fill the vacancy created by the resignation of George R. Moodey.

W. L. Hall, former Director of Street Construction, has been appointed temporary City Manager of Staunton, Va.

Harry J. Humphrey, a former executive of the Wheeling Steel Corporation, has been selected as first City Manager of Wheeling, W. Va. He assumed his duties July 1.

Seymour Justema was appointed City Manager of Grand Haven, Mich., to succeed Peter A. Kammeraad, who resigned recently to accept the position of Public Service Director at Grand Rapids.

C. A. Miller, former City Engineer, was appointed first City Manager of Grayling, Mich., following the adoption of a council-manager charter on May 27.

H. G. Pope, a civil engineer, has been appointed first City Manager of Rockford, Mich. He will assume his duties on August 1.

J. G. Thorne, who served as City Manager of Maquoketa, Iowa, from 1926 to 1931 and who for the past four years has been superintendent of the municipal water works at Kewanee, Ill., has been appointed Manager on July 11 at Maquoketa, to succeed J. H. Curtis.

Edmund H. Waterhouse, former City Manager of Glenview, Ill., was appointed City Manager of Gladstone, Mich., effective July 15.

CLARENCE E. RIDLEY,
Executive Director, The International City Managers' Association.

The Municipal Bond Market

Recent sales of new issues from the July numbers of *The Bond Buyer*:

Amount	Borrower and Purpose	Rate (%)	Term (Years)	Basis (%)
$160,000	Charlottesville, Va., Refunding Reservoir	2.5	1-5 Ser.	1.72
720,000	Stamford, Conn., Emergency	2	2-13 Ser.	1.99
250,000	Evanston, Ill., Water-Works System	4	12.25 Avg.	2.98
400,000	Shillington, Pa., Mohnsville Water Company Purchase	2.5	18.33 Avg.	2.48
2,500,000	Port of New York Authority, Series F	3	5.66	3
3,500,000	Dallas, Texas, Park Improvement, Institute of Fine Arts	3	15 Avg.	3.076
296,000	Bayonne, N. J., Water and Park	3.25	11.8	3.16
1,600,000	Los Angeles, Calif., Water-Works Election	3.5	1-40 Ser.	3.41
120,000	Youngstown, Ohio, Parks and Playground	3.5	5.75 Avg.	3.498
800,000	Kentucky, Bridge Revenue	3.5	20	3.5
396,000	Birmingham, Ala., Public Improvement, Refunding	3.5	7.33 Avg.	4.07
1,000,000	Louisiana, Highway	5	9.33 Avg.	4.49
273,417	Klamath Falls, Ore., Refunding	4	9.8 Avg.	4.51

TRAFFIC SAFETY *is your responsibility*

PUBLIC sentiment—public demand—everywhere is calling upon local authorities to do something definite to make streets and highways safer. *Safer cars*—not more laws to regulate traffic—are needed!

Compulsory vehicle inspection is the universal answer!

Bendix, pioneer of motoring safety, has met the situation with precision equipment. The new Bendix Civic Safety Clinic provides quick, scientifically accurate testing of brakes (each wheel separately, through an entire revolution, thus detecting out-of-round drums, flat or glazed or scored spots). It tests steering "geometry" thoroughly, tests headlights, springs, frame and wheel alignment, horn, lights, windshield wipers and mirrors.

The Bendix Civic Safety Clinic is not only thorough and accurate, but fast. Tests five cars at once, turning a car a minute off the line. Everything in full view of driver—he *sees* what's needed.

Bendix has full details including proved plans of operation, available for the asking. The Bendix Civic Safety Clinic can readily be entirely self-supporting!

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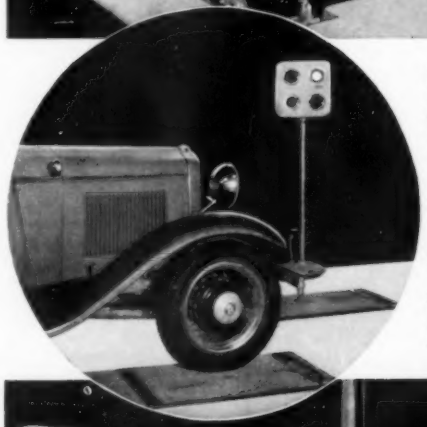
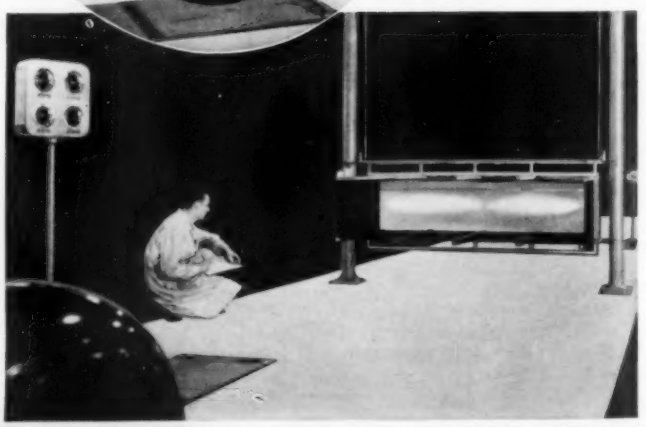


Above: *Tests each brake separately—by full wheel revolution under electric power . . . shows total stopping ability . . . shows up "out-of-round" drums. TESTS TRACTOR AND TRAILER TRAINS*

Left: *Tests wheel alignment, caster, camber, toe-in, entire steering geometry, precisely, quickly and easily.*

Below: *Tests headlights for focus, level, intensity . . . on a screen . . . in daylight!*



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TRAFFIC CONTROL AND FACILITATION

Conducted by Publications Committee, Institute of Traffic Engineers, 175 Fifth Ave., New York

Paul L. Green, Chairman; Melvin J. Bankhead, James R. Guthrie, T. T. McCrosky, D. Grant Mickle, Robert A. Mitchell, Edward J. O'Meara, Miss I. K. Rolph, Peter J. Stupka, J. C. Vincent, John C. Wrighton

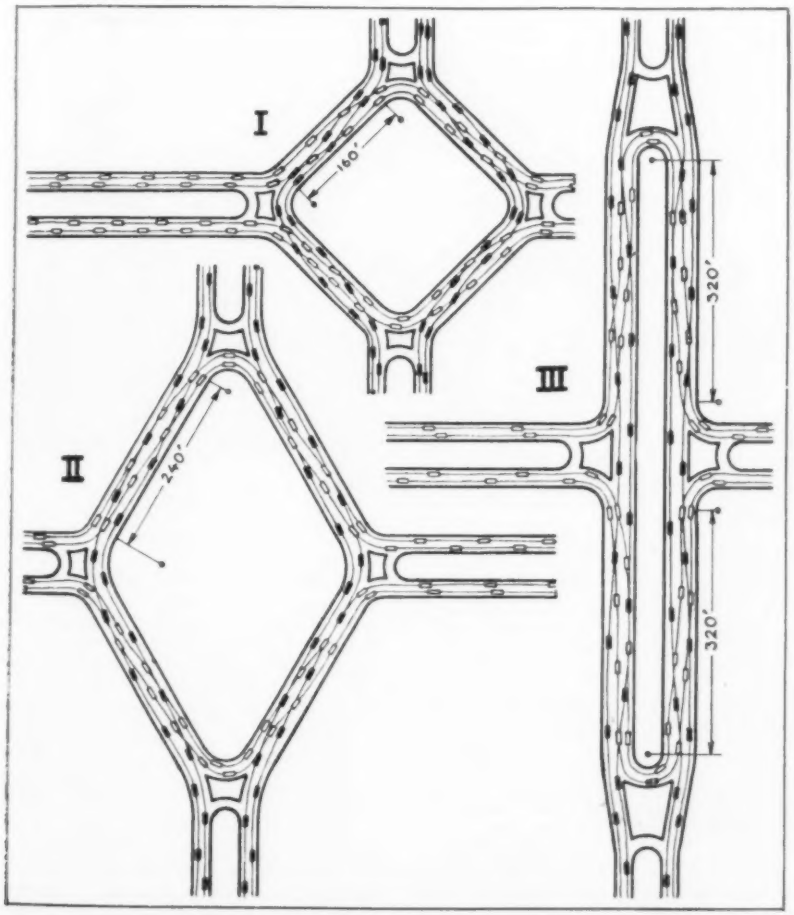
Steadyflow

Able Traffic Engineers Appraise the Plans of the Late Fritz Malcher

SIX, five and four years ago the late Fritz Malcher was pushing with energy and ability, and with the cooperation of THE AMERICAN CITY, his Steadyflow plans for fitting the traffic arteries of the world to the motor age.

In the beginning, one of the principal streets of Radburn, N. J., designed by him, furnished the outstanding example of what Mr. Malcher was urging. This system consisted essentially of a middle strip separating the highway into one-way roadways, and a system of street crossings without intersection of traffic and without grade separation, and cloverleafs at major intersections. The driver makes a right turn onto the highway, continues to the first break in the middle strip, and makes the left turn by weaving into the opposite-bound traffic. This is the Steadyflow feature. The general plan also includes alternating the traffic flows on parallel existing streets, the familiar one-way street system.

This system, which Mr. Malcher advocated and did much to perfect, has since been applied to a number of major highways, and is generally recognized as being sound and sensible. Among the early powerful supporters of the plan were Burton W. Marsh, Ralph W. Eaton and Harold M. Lewis—who still reassert their belief in the integrity of Steadyflow. In the absence of Mr. Lewis, Engineer and Planning Consultant for the Regional Plan Association, New York, C. Earl Morrow, Principal Assistant Engineer, provides the opening statement.



THREE TYPES OF MALCHER INTERSECTIONS

I, two arteries of same class; II, first-class road given advantage over second-class road; III, first-class road given still greater advantage

Steadyflow for New Routes; Present Success Appraised

IN any current appraisal of the Malcher Steadyflow system it should be kept in mind that highway design has consistently kept pretty far in the rear of the changing needs of vehicular travel, that a certain period of experimentation is justified before adoption of new ideas on a broad scale, and that the Steadyflow system in practical application is largely limited to new routes or new communities.

Existing street widths are for the most part inadequate for the Steadyflow idea, and widening costs prohibitive. An efficient and economic layout of a community on the Steadyflow basis implies the reorganization of the entire street system and business areas, obviously impractical in a community already built.

There are, nevertheless, certain principles of the Malcher system which can be applied to existing streets of adequate width and to new highways in the open country, particularly at intersections. The application of some of these principles can be traced in recent highway and parkway construction in the New York Region on the highways of New Jersey and the parkways of New York.

Notable among the New Jersey routes are plans for State Route No. 2, sections 7 and 8. Starting with a cloverleaf at route No. 4 at Paramus, two one-way roads with a narrow strip between are being constructed northerly to Franklin Turnpike. The more important cross-traffic lanes are separated by under- or over-passes, and the less important ones detour around an oval in the central strip, using the principle of oblique crossing.

The West Side improvement on Manhattan includes plans for separate roadways for traffic in opposite directions. Some of the parkways of Westchester County and Long Island utilize traffic circles and various other forms of intersection treatment.

It is believed that a more general application of some of the principles of the continuous flow system will obtain in the near future. The Harvard School of City Planning will stimulate this movement by publishing as one of its research studies a book on the system by Fritz Malcher.

Perhaps the thing which would do most to hasten further adoption would

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WHAT ROOFS DO THE EXPERTS PICK?

School architects know the facts about roofs and roofings. They have so many separate buildings and so many different roofs that they have an unparalleled opportunity to get the facts.

Within the past year, these typical developments have taken place:

1. The head of the School Board which controls all the state schools in one southern state put through an iron-bound regulation that all flat roofs on school buildings must be coal tar pitch and felt.

2. The School Board of a large mid-western city specified that coal tar pitch and felt must be used on all its flat-topped buildings.

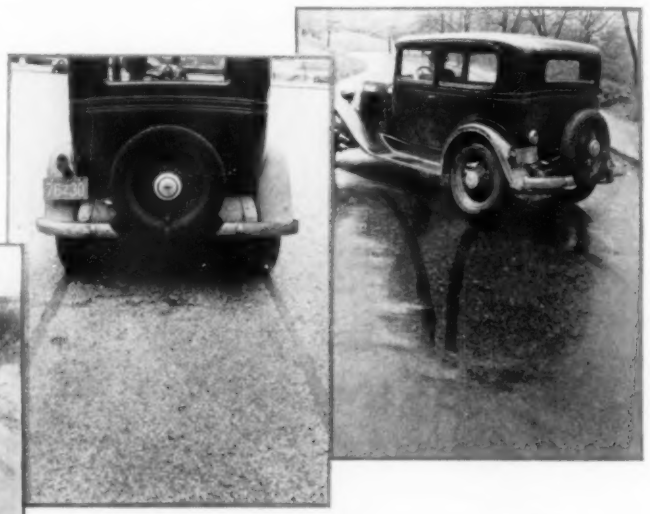
3. The school architect of a metropolitan eastern city, after a survey of all school roofs, directed that all flat roofs in the future must be coal tar pitch and felt.

There must be a reason for this. Fill in the coupon below for further information.

SAFER ROADS

The photograph on the extreme right shows how a car skidded on a non-tar street when brakes were suddenly applied during a rain. The other photo shows how the same car traveled in a straight line to a quick stop on a wet Tarmac street without skidding. Same car . . . same driver . . . same brakes . . . approximately the same braking pressure . . . same rain. Tarmac is used to build skid-resistant surfaces on new streets and roads and to make old slippery surfaces non-skid.

Below—A finished Tarmac surface in Montgomery County, Pennsylvania. Note the skid-safe surface.



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be a research consisting of an appraisal of the success of roadways already constructed using these principles of design, supplemented by an interpretation of the principles in their practical application to typical problems that obtain in present-day construction practice.

C. EARL MORROW,
Principal Assistant Engineer, Regional Planning Association, Inc., New York.

The Growth of the Idea

REGARDING the system which Mr. Malcher called the Steadyflow system, my attitude is quite thoroughly set forth in "Planning Highways and Street Intersections for Modern Traffic Needs," printed in The Municipal Index of 1931. While Mr. Malcher was not the originator of the basic idea, he was probably its strongest and most enthusiastic advocate. He also deserved high commendation for some splendid contributions to the further development of the idea.

In the last few years there has been a rather marked trend toward a much more widespread use of the basic principles of the Steadyflow system. While the divided highway is being more extensively developed in Europe, especially in Germany, the Tennessee Valley Authority is now constructing a freeway. In addition to a divided highway without intersections of the usual type, the freeway embodies the very desirable principle of prohibiting ingress to and egress from abutting private property (except at widely separated points with intersections of Steadyflow design). New Jersey has constructed numerous examples of traffic circles and other Steadyflow facilities. The state of Washington has several divided highways, so has Massachusetts, and there are numerous other examples throughout the country. I think of Lincoln Park in Chicago and of the plans for further development of lake-front "express freeways," or "limited ways"—as Dr. Miller McClintock calls them.

A considerable number of cloverleaf intersections have been developed, and there is general recognition today that under certain conditions of heavy traffic and available land, this is the desirable type of "intersection valve" development. Furthermore, the costs *can* be economically justified in some places.

The attitude of the Fourth National Conference on Street and Highway Safety was favorable to this type of development. Page 29 of "Guides to Traffic Safety" includes references to rotary traffic islands, center strips to form two separate one-way roadways, grade separations, segregation of through traffic from local traffic, and street systems in residential developments planned to avoid pedestrian hazards. Furthermore, on page 30 there is a favorable reference to the street design in Radburn, N. J.

In the "Manual on Uniform Traffic Control Devices" adopted by the National Conference on Street and Highway Safety and the American Association of State Highway Officials, there is mention in Part IV, "Islands," of the general types of physical flow facilities which Mr. Malcher so enthusiastically advocated.

In a paper presented last February at the Michigan Highway Conference entitled "Looking Ahead at the Traffic Problem," the writer gave major emphasis to many ideas in line with Mr. Malcher's thoughts and designs. The paper stressed particularly the express freeway and gave data from New Jersey, Massachusetts, and the state of Washington concerning the reduction of accidents with divided roadways.

The American Society of Civil Engineers in a recent Proceedings presented recommendations of a committee for several Steadyflow principles. This report stressed the fact that these new design concepts were *now* needed in certain places and would soon be needed in many more places.

Recognition must be given to certain serious obstacles to rapid acceptance of these design principles. They involve very greatly increased cost over the so-called standard two- or four-lane highway. Most highway engineers are so pressed in their use of funds to increase mileage and to develop secondary road systems that they cannot see their way clear to expend much larger amounts per mile for this modern type of design. Some highway engineers are not convinced of the need for it, and many—while they may agree that it possesses certain merits—do not consider the concept economically justified within their states.

A recent inquiry to state highway officials included a request for views on divided highways. Quite a number indicated favor to the plan, but there were others who did not think it necessary for their conditions.

Another major reason for objection is that some of the features of this general concept of highway and intersection design have been very badly misapplied by inexperienced engineers. For instance: circles much too small in diameter to function in the proper manner; circles in which the layout does not bring about the necessary reduction in speed; divided highways which were not properly designed so that islands would be clearly visible to the driver both day and night. Wherever any "obstacle" (such as a traffic circle or divisional island) is constructed in a highway of customary design, it *must* be very strikingly visible both day and night. Such errors as these have set some engineers against the whole concept. Improper signposting and marking have also had a bad effect on acceptance of these modern concepts of highway design.

BURTON W. MARSH,
Director, Safety and Traffic Engineering Department, American Automobile Association, Washington, D. C.

Boulevards in Providence

REGARDING what Fritz Malcher called the Steadyflow system of traffic facilitation, I can give you my own reaction at this time based on experience with the system on two boulevards in this city.

Regarding Fox Point Boulevard in Providence, which went into operation September 25, 1930, this street from the beginning carried a heavy volume of traffic. At one end, where the boulevard feeds into a number of streets, and where the layout is imperfect, there is some congestion at times. Otherwise the operation of this boulevard is, I believe, satisfactory, considering all the conditions, and I have never heard it suggested that it should not have been so constructed.

In November, 1931, there was completed and placed in operation an additional piece of highway constructed along similar lines. This was the portion of North Main Street, between Benefit Street and Doyle Avenue, a distance of only 1,440 feet, but a part of one of our most important trunk routes. In this new section, certain more advanced ideas were embodied, based upon experience with the earlier job. The accident record on this newest section has been good, and I have heard no criticism of its construction.

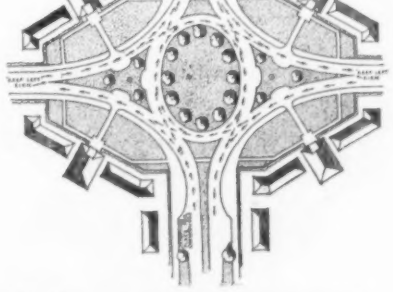
Many factors are to be considered in making a specific decision, and among them the pedestrian problem is important. The planning of the earlier of the two streets referred to was done before we knew of Mr. Malcher, and we had made considerable use of rotary traffic fully ten years ago. Certainly, the use of rotary traffic areas, or traffic circles, has spread enormously in recent years.

RALPH W. EATON,
City Traffic Engineer, Providence, R. I.

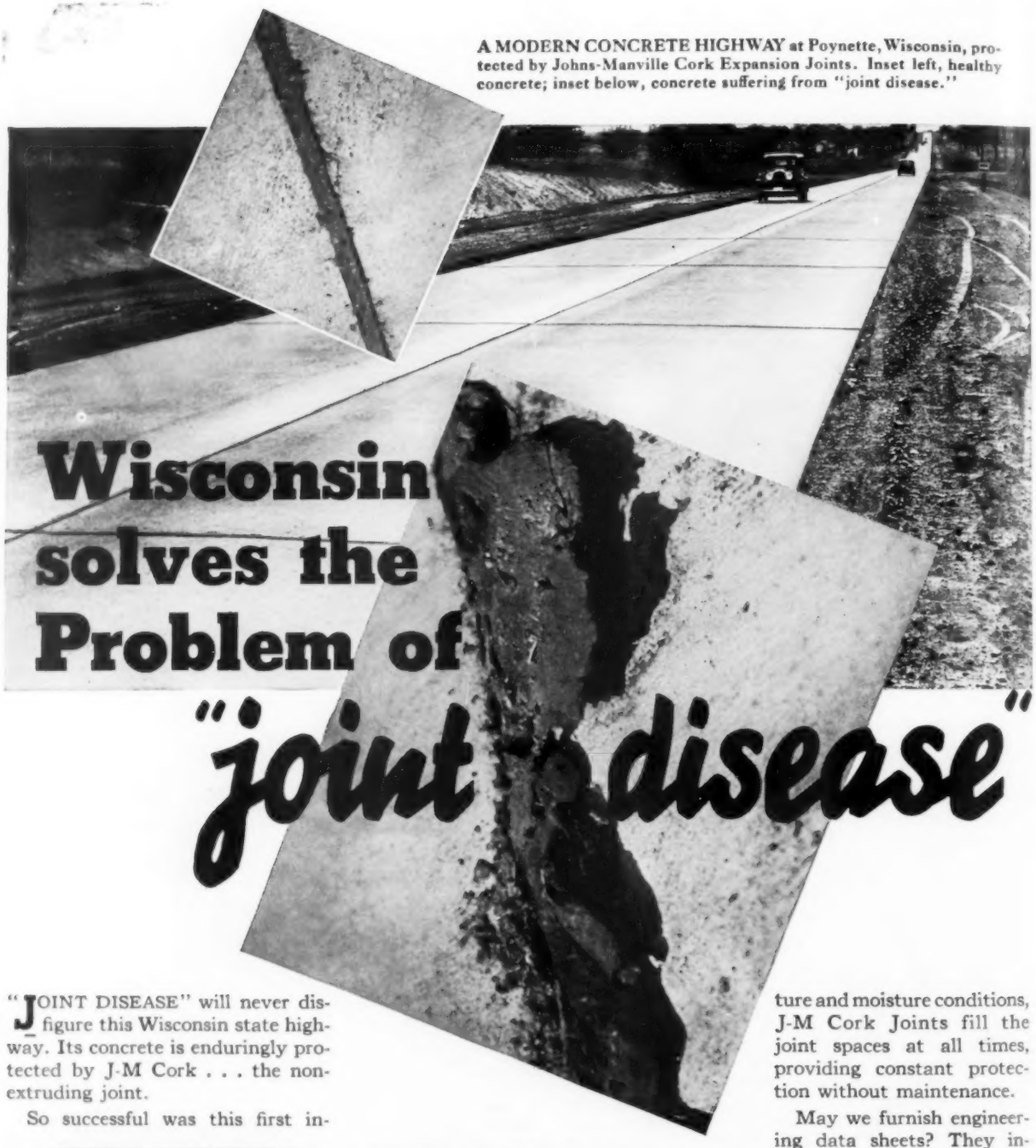
Steadyflow at Wythenshawe

THE most recent mention of this system, possibly, is in an account of the planning of "Wythenshawe, A Modern Satellite Town," outside Manchester, England, in the June issue of *The Town Planning Review*, Liverpool. Says Wesley Dougall:

"The parkways are primarily to solve traffic and secondarily for esthetic value—"a traffic road approximately at the center, with park-like strips at



each side; no houses abutting on the carriage way, thus freeing the road of standing vehicles and those entering and leaving individual houses and thereby creating a traffic nuisance; footpaths and trees in the park-like strips; and traffic islands to enforce the "Steadyflow" or gyratory system of traffic at the road crossings, which are at infrequent intervals."



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Wisconsin solves the Problem of "joint disease"

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Power of Federal Government to Condemn Land for Housing

By IRA S. ROBBINS
Counsel, New York State Board of Housing

BY a two-to-one vote, the United States Circuit Court of Appeals, Sixth District, has held that slum clearance and low-cost housing projects are not a public use for which the Federal power of eminent domain can be exercised. The decision, rendered on July 15, 1935, affirms the decision of the United States District Court for the Western District of Kentucky, in the action affecting the proposed project in Louisville, Ky.

The majority of the Court expressed some doubt as to the power of Congress to expend tax money for housing purposes. The Supreme Court of the United States has never squarely decided whether or not the authority of Congress in levying taxes and spending the proceeds thereof applies to all such purposes as Congress may deem in the public welfare, or is limited to the exercise of the powers specifically enumerated and delegated to it in the Constitution. The Court referred to the fact that Congress has established many bureaus and agencies supported by tax funds, for the purpose of promoting the general welfare. As to these, the Court said: "These activities, however, do not of themselves create authority, for unless the authority exists, it cannot be created by Congressional acts transcending proper limits in aid of beneficently established Government bureaus and other agencies."

The fundamental issue in the case was whether or not the Federal Government could exercise its power of eminent domain to carry out Federal housing projects. The majority opinion pointed out that the liberal interpretation by the Supreme Court of what constitutes a "public use" had been made in cases involving condemnation by states, and that in those cases the issue was whether or not the taking was in violation of the due process amendment to the United States Constitution. In those cases the exercise of the power of eminent domain was in support of the exercise of the police power of the states. The Federal Government having no police power, the taking in the case before the Court had to be justified on the theory that it was for a Federal public use. The Court held that "the taking of one citizen's property for the purpose of improving it and selling or leasing it to another, or for the purpose of reducing unemployment, is not, in our opinion, within the scope of the powers delegated to the Government."

The majority also questioned but did not pass upon the validity of the public works provisions of the National Industrial Recovery Act, in so far as they provide for a program of slum clearance and low-rent housing. It expressed doubt as to whether or not there was an illegal delegation to the President and his Administrator of Public Works, of legislative power, in determining the details of the program.

A vigorous dissenting opinion by Judge Florence Allen upheld the contention of counsel for the Government on all three issues in the case.*

Until this case is decided by the Supreme Court, uncertainty will prevail as to whether or not the Federal Government can engage in slum clearance and low-rent housing at all, and if it can, whether or not its power of eminent domain may be exercised in connection therewith. In the meantime the Federal program can be continued. If it is necessary to acquire land by condemnation, the PWA may avail itself of the powers of state and local agencies, as is being done in pending New York City projects.

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* For an abstract of the brief, *amici curiae*, submitted in this case by Alfred Bettman, Ernest J. Bohn, Charles Abrams and Ira S. Robbins, see the July number of THE AMERICAN CITY, page 73.

Tax-Exempt Municipal Securities

To the Editor of THE AMERICAN CITY:

Of late there has been considerable agitation to remove municipal bonds from exemption from taxation, on the theory that some of the citizens own considerable amount of tax-exempt securities and therefore pay no income tax and thus such individuals are not paying their just share of the burden of governmental expenditure of cost. Even our friend Will Rogers last month commented on the proposed legislation, stating that it was about the best bill presented to Congress. However, very few people seem to realize the true situation regarding tax-exempt securities and who would actually pay the tax were his exemption removed.

As a matter of fact, a large percentage, in fact the majority, of the tax-exempt securities are not held by individuals but by savings banks, trust funds, pension funds of different states, and other similar authorities which are not subject to taxation in many ways. Municipal bonds have been made tax-exempt for the purpose of relieving the tax burden of the taxpayer in the various municipalities issuing such securities and thus encouraging municipal improvements. Tax-exempt securities of municipalities, by reason of being tax-exempt, sell at a lower rate of interest than other securities. Should such municipal securities or the income from the same be made subject to taxation, then the interest rate would be materially increased. In fact, the increase of the interest rate would naturally be substantially equal to the amount of the tax imposed upon such securities.

At times when the market for industrial securities is active and favorable, then the market for municipal securities is less advantageous, and should the general market again approach conditions similar to those of 1928 and 1929, many of our municipalities might be unable to sell their securities, for the reason that the resulting total interest rate necessary to meet the then existing market conditions, plus the necessary tax, would exceed the maximum interest rate permitted by statute or otherwise.

The actual fact is that any tax which might be levied on what are now known as the tax-exempt securities would really be paid by the taxpayers of the municipalities issuing such securities, and not by the holders or owners of the securities, who would really collect the tax from the taxpayers or the municipality where the tax would be added to the normal tax rate, and then pass such amount on to the Federal Government. The result would be an increase in taxes for such municipalities which issue securities and would really not affect the owners of the same or their income from such securities, but would probably result in a material decrease in municipal improvements, which in turn would result in increased unemployment with its entailed municipal expenses. To impose a tax on municipal securities for the purpose of driving investments into private securities would in fact be subsidizing private business at the taxpayers' expense.

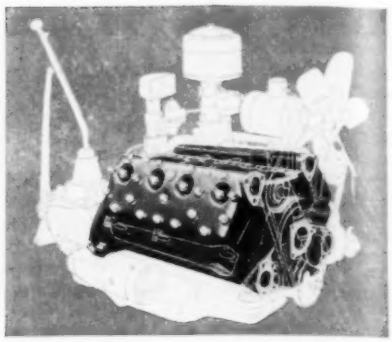
A few years ago when stock market speculation was rampant and private securities of all kinds were being floated and sold to the general public regardless of safety of investment, municipal securities were difficult to float and municipal improvements consequently were difficult to finance, owing to the heavier interest charge, but there was no suggestion made that legislative action be taken in an effort to aid such municipal financing, and the taxpayers of the various municipalities had to pay interest at the market price. Had there been a tax on municipal securities at this time, it would have been almost impossible to secure proper financing for most of our municipalities.

The general public do not seem to realize what it would mean to their local taxes should municipal securities be made subject to taxation, and who would actually pay the tax. I wonder if this movement is not merely another method of securing funds by the Federal Government, which will be paid not by the holders of municipal securities, but by the taxpayers of the municipalities issuing such securities, and will retard municipal improvements as well as tend to increase unemployment by reason of preventing new municipal improvements.

WILLIAM T. FIELD,
Watertown, N. Y.

July 18, 1935.

Here's One Reason Why CITY DEPARTMENTS Are Changing to Fords



THE Ford V-8 engine is distinctly a quality product. It is designed and built to give reliable, economical service throughout its unusually long life.

But even this great engine will need overhauling SOME day. And when that day arrives . . . YOU won't have to foot a big repair bill or do without your truck for more than a few hours. Instead, after your original engine has given you thousands of miles of reliable, economical service, you can exchange it for a block-tested, factory-reconditioned engine . . . consisting of a complete cylinder assembly and heads . . . at a much lower cost than an ordinary engine overhaul and in much less time.

Thus . . . from the very day you buy a Ford V-8 Truck or Commercial Car, you are sure of low maintenance costs.

Ford alone . . . among the manufacturers of low-priced trucks . . . offers you this modern, economical low-cost engine exchange plan and the privilege of exchanging many other assemblies.

MAKE YOUR OWN TEST OF V-8 PERFORMANCE AND V-8 ECONOMY RIGHT ON YOUR OWN JOB

These Ford exchange privileges are important, of course . . . from the view-point of low maintenance costs. But even more important are those features of Ford V-8 Trucks and Commercial Cars that make V-8 Performance and V-8 Economy the standards of the commercial field.

See for yourself what these features mean to you . . . how much time and money they save you . . . by making an "ON-THE-JOB" TEST with your own loads, and comparing V-8 Performance and V-8 Economy with your present equipment. Then ask DELIVERED price of the body type you plan on buying!

FORD V-8 TRUCKS AND COMMERCIAL CARS

IMPROVING MUNICIPAL ADMINISTRATION

Current Items from the
Public Administration Clearing House

Unusual Services Rendered by Municipalities

AMERICAN municipalities are taking upon themselves a variety of unusual services, as shown in current issues of the *United States Municipal News*. Some of them are of emergency duration; others are more permanent.

Tulsa, in the process of immunizing 4,000 dogs against rabies, is allowing free license and serum for all approved poverty-stricken dog owners who cannot afford to pay for the treatment. Little Rock, Ark., has adopted an ordinance providing for the service of a veterinarian to vaccinate dogs for rabies prevention when the owner applies for a dog license, which costs $2. The city pays 75 cents for each dog vaccinated.

The Duluth Park Department has recently completed a survey locating each of the city's 20,944 shade trees, determining residential areas in which there is a lack of trees, and discovering types of trees best adapted to the city's streets.

The Council of Fort Worth, Texas, has appropriated $2,500 for weed eradication, thus relieving property owners of the expense of cutting weeds on their vacant property. Efforts to collect for this work in the past had proved unsuccessful.

Albany is opening a municipal bath for the rehabilitation of citizens suffering from infantile paralysis. Transportation for the sixty or more persons thus afflicted will be provided daily by the Red Cross Motor Corps. A TERA nurse will have charge of the work, which is under the direction of the City Health Commissioner.

Cleveland, Tenn., has gone into the gasoline business in an effort to force down prices. The municipal station offers gasoline at 20 cents a gallon as against the 23 cents charged by the oil companies.

Duluth, one of several cities enlisted in the general fingerprinting campaign, makes the service available to all citizens. Prints may be kept, to be filed by the individual, or will be filed with police departments or the civil files in Washington at the printer's request.

Revised Zoning Needed

A NEED for revising municipal zoning ordinances is seen by Walter H. Blucher, Executive Director, American Society of Planning Officials, who says that "zoning practice during the 'fat years' included mostly compromise ordinances which want improvement to be in line with sensible city planning." During the boom period, he explains, cities which zoned were inclined to be too optimistic as to their growth. It is almost universally conceded that far too much industrial property was provided for and that there was too intense a use designated for residential purposes.

"The city of Warren, Ohio, for example," says Mr. Blucher, "had a population in 1920 of 27,050; in 1930, the population had increased to 41,062—a pretty good rate of growth. Enough land had been zoned in this municipality, however, to provide for 537,960 people. At the present rate of growth, it would take approximately 125 years to make use of it for its designated purposes."

The experience of Warren is repeated in practically every city in America, Mr. Blucher comments. The result of badly judged zoning is that property set aside for industrial use can be put to no use at all. Furthermore, owners of property in areas zoned for commercial purposes are frequently thus misled into believing that commercial use of their property is imminent, when, as a matter of fact, on the basis of known population trends, entire use of the property as designated could often not be made in over a hundred years. Blighted areas, noticeable in the vicinity of the business zones of many American cities, are also an indirect result of zoning. They represent lots held for speculation by property owners whose visions will never be fulfilled. In some cases this has hampered the purchase of land for low-cost housing.

Revision of zoning ordinances is needed to provide for less intensive residential occupation and for only as much commercial and industrial use as can reasonably be expected, he points out. This will make possible stricter adherence to zoning ordinances and will also result in more intelligent land use.

Property-Pooling Successful in Nome

PLANNING officials, who often wish for some form of procedure allowing the pooling of properties when a few lot owners object to replatting of badly subdivided parcels of land, see their dreams fulfilled in the case of Nome, Alaska, as an aftermath of the disastrous fire of a few months ago. Nome's large-scale experiment in voluntary property pooling is reported in the July *News Letter of the American Society of Planning Officials*.

When the Alaskan city of 1,000-odd population was nearly annihilated by fire last fall, all city records but the tax-roll were destroyed. A survey and plat of the city supplied by B. O. Stewart, Commissioner of Mines for Alaska, and a couple of boundary markers found in the débris comprised all the survey data replanning engineers had to work with.

Intending to improve the town in the rebuilding, the planning committee of 15, appointed by the Governor of Alaska, recommended a new layout of streets, involving the replatting of properties. A local lawyer who knew every piece of property in the town undertook to collect deed agreements, to make the new land valuations, and to draw up new deeds. Property owners cooperated in a communal spirit, and all property transactions were by word-of-mouth and trust of the lawyer in charge. Mining companies and lodges located in the town contributed properties toward the general pool, thus enabling every private owner to obtain a slightly larger property in the redistribution of parcels. In replanning, former errors and deficiencies, which were generally known and recognized, were permitted to be rectified by common consent.

The Nome experiment is an interesting one, it is pointed out, since in this country there is no legal means available to compel dissenting property owners to agree to a replatting plan. Where private properties are involved, one owner has frequently been able to prevent many from rearranging all lands for their best and highest use.

Street Cars into Busses

STREET cars are being replaced by busses in both large and small cities, according to *Public Management*. One hundred cities of over 25,000 population now employ gas or trolley busses as the only means of public transportation. In numerous other cities busses are used as feeders to supplement street cars or to serve areas which have no other kind of public transportation.

Many cities own and operate their own bus systems. Among them are Detroit, Mich.; Seattle and Tacoma, Wash.; San Francisco, Santa Monica and Eureka, Calif.; Phoenix, Ariz.; Coral Gables, St. Petersburg and St. Augustine, Fla.; Alexandria and Monroe, La.; Ashtabula and Youngstown, Ohio; Radford, Va.; Greenfield, Mass.; Brainerd, Minn.; Hopkinsville, Ky.; and San Angelo, Texas.

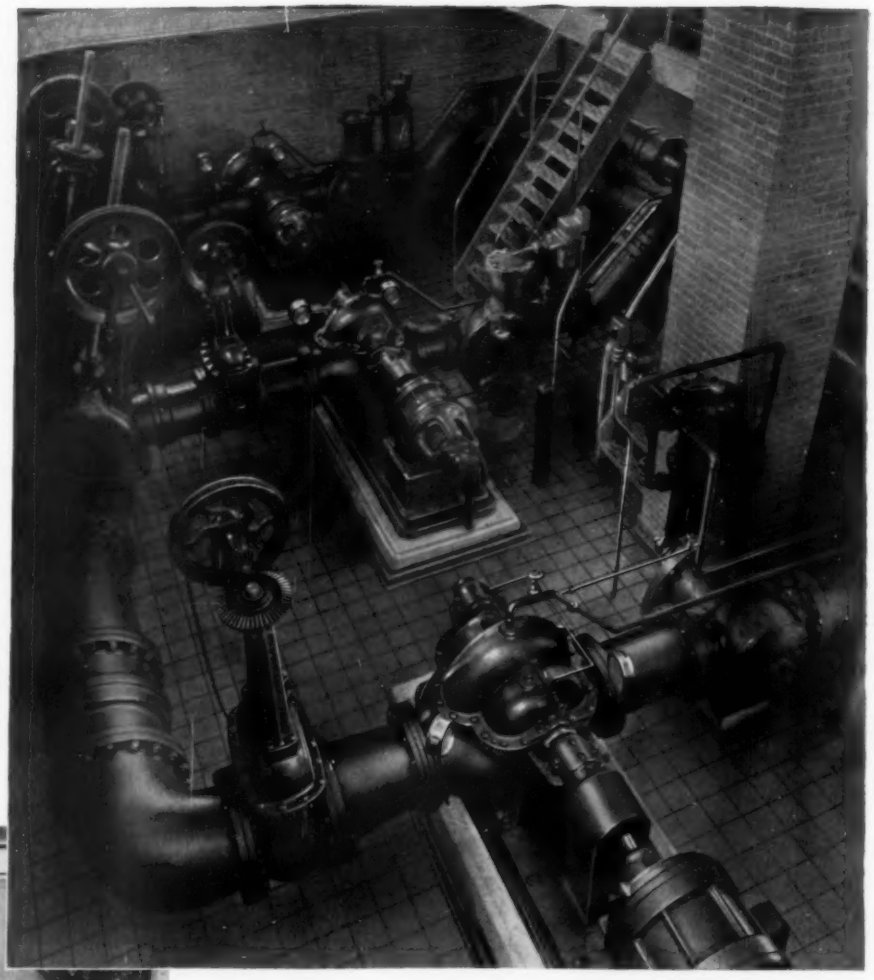
New York City in February saw its oldest street-car line, established 103 years ago as a horse-car line, turned into bus service. Busses have replaced street cars in Macon, Ga., Wichita, Kans., Lawrence, Mass., and Asheville, N. C., also since the first of the year.

Before a city takes over the operation of busses, it is pointed out, a careful investigation should be made of the area served, type of equipment to be used, capital investment required, personnel and organization set-up, operating costs, and estimated revenues.

If a city decides to award a bus franchise to a private company, it should provide a means of control in the public interest. Among problems arising in connection with letting a franchise for busses are the control over the type of bus to be used—trolley or gasoline-operated—

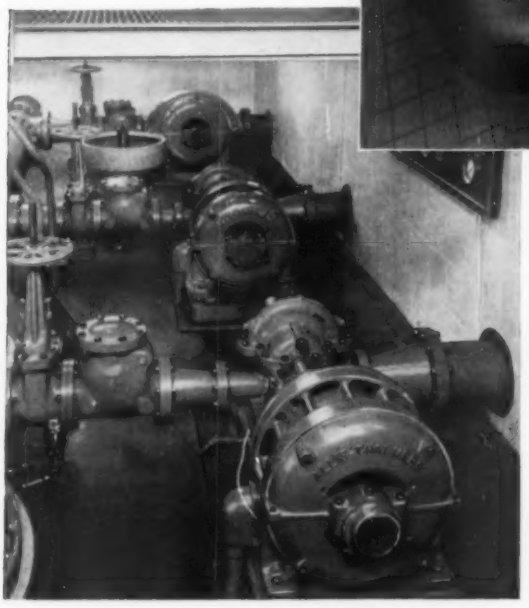
the heart of the plant

Good Pumps



Filtration Plant Pump Room, City of Wilmette, Ill. Allis-Chalmers Centrifugal Pumps and Motors installed in 1933.

Pumps for City Water Supply, City of Wauwatosa, Wis., 1400-gpm, 190-ft. head, driven by 100-hp motors.



THE pump room is the heart of the filtration plant or water supply system. So much depends upon it that only the most suitable and economical pumping equipment is desirable.

Allis-Chalmers has been manufacturing pumping machinery for more than fifty years, building equipment for hundreds of municipal projects, including filtration, water supply, sewage, and drainage plants. The pumps range in size from 1½"x1½" to giant units with 72" discharge.

Allis-Chalmers builds both the pumps and the motors which are to drive them. The motors are selected to fit the pumps ... They must have the right characteristics.

Most municipal pumping requirements can be filled with Type S single-stage, double-suction pumps. They are described in Bulletin 1650-A. Write for a copy.

ALLIS-CHALMERS

— Allis-Chalmers Manufacturing Company, Milwaukee, Wisconsin, U.S.A. —

and payment to the city by the bus company for use of the streets. The general practice where motor-busses are operated under a franchise is to require payment of a percentage of the gross receipts of operation—frequently 3 or 4 per cent.

The franchise, it is explained, should require the operating company to furnish liability; provide for the approval of equipment by the city; provide for compliance with Federal, state and city laws or ordinances as to the passenger-capacity, terminals, speed, etc.; and safeguard the city's privilege of making further regulations and rules for operation and supervision of the bus company and the power to extend or cancel permits. The franchise, it is advised, either should be for a fixed short term or should have definite provisions for recapture by the municipality, which later may want to operate and support its own system.

Principles of Balance Between National and Local Taxes

WITH the Federal Government enlarging its activities as never before in the history of the country, basic principles of political economy are coming to be more and more popularly understood. In this connection James W. Martin, Research Director of the Interstate Commission on Conflicting Taxation, last week presented to the Institute of Public Affairs, of the University of Virginia, "certain principles of balance as between the revenue laws of central governments and those of subordinate units of government."

The first of these principles Dr. Martin defined as being adequacy, "a tax system so contrived that each level of government will secure adequate revenues to pay for maintaining those functions of government which are assigned to it." A condition of adequacy, Dr. Martin explained, was a tax system so arranged that each governmental unit might "independently adjust revenues in keeping with immediate needs."

A second principle of balance was defined as "economic and administrative suitability." Since the incomes of large corporations, for instance, are earned over a wide geographical area not clearly defined, it would be unsuitable, Dr. Martin pointed out, for a municipal government to administer the income tax of such corporations. "The principle of suitability," said Dr. Martin, "also dictates that in the assignment of revenues the legal and economic jurisdiction shall be such that the unit made responsible may exercise authority adequate for successful administration."

Because all spending agencies must have "fiscal responsibility," he pointed out, a third principle of balance may be termed "independence and responsibility." Since local governments are likely to consider state aid as "easy money" and because local expenditure of Federal funds invites "pork-barrel tactics," it is necessary, said Dr. Martin, "that, as far as possible, every governmental unit responsible for spending public money should be politically liable for imposing taxes to finance the functions thus supported."

A fourth principle was described as embodying "balancing factors," whereby poor states or poor counties might be aided in performing socially necessary activities. Grants-in-aid and centrally administered, locally shared taxes are among these types of local assistance.

Fewer School Districts for Economy

IF we accept the nearly unanimous verdict of those who have studied the subject and conclude that we have in this country too many governmental units (the total number is approximately 175,000) then we must agree that a reduction in the number of school districts is a pressing necessity, according to Robert M. Paige, Secretary of the Governmental Research Association; for of the 175,000 governmental units, 127,000 are school districts. "It is encouraging to note," says Mr. Paige, "that a few states are acknowledging this problem and seem to be proceeding towards the goal of larger, more economical school districts and an educational system which will provide all of the people with better educational facilities at lower unit costs."

In Ohio, the Traxler-Kiefer Act, passed by the 1935 Legislature, provides machinery for a reconstruction of the rural school system and the elimination of inefficient school districts. Almost half of Ohio's 2,000 school districts are too small to operate an elementary school of sufficient size, and more than three-fourths of them do not have enough residents to maintain a satisfactory high school. Under the new act, the State Department of Education has the power to compel county boards of education to re-draw school district boundaries. Eligibility for state subsidy is conditioned upon the execution of reorganization plans approved by the State Department. Under the new law this state subsidy will amount to about one-half of the total cost of operating the schools, since the state has undertaken to guarantee a minimum educational program to all school districts levying a tax of 30 cents per $100 of assessed valuation for operating purposes.

The movement for school district consolidation and reorganization in Pennsylvania has the backing of the Citizens' Conference called by the Governor in October the past year. One of the important planks in its platform is the creation of school districts large enough for efficient administration. Consolidation of third- and fourth-class school districts, it is estimated, would cut more than $3,000,000 from the annual school bill.

In Illinois, Simeon E. Leland, State Tax Commissioner, is recommending the creation of a school "equalization" or "development" fund from which aid would be given to school districts in such a way as to encourage consolidation and reorganization into proper modern units for the maintenance of educational facilities. Illinois at present has more than 12,000 school districts.

"The little red schoolhouse of one room belongs to the horse-and-buggy age," says Mr. Paige. "Small school districts must give way to larger units capable of providing adequate educational opportunity at a cost which the taxpayers can afford."

New State Gasoline Tax Legislation

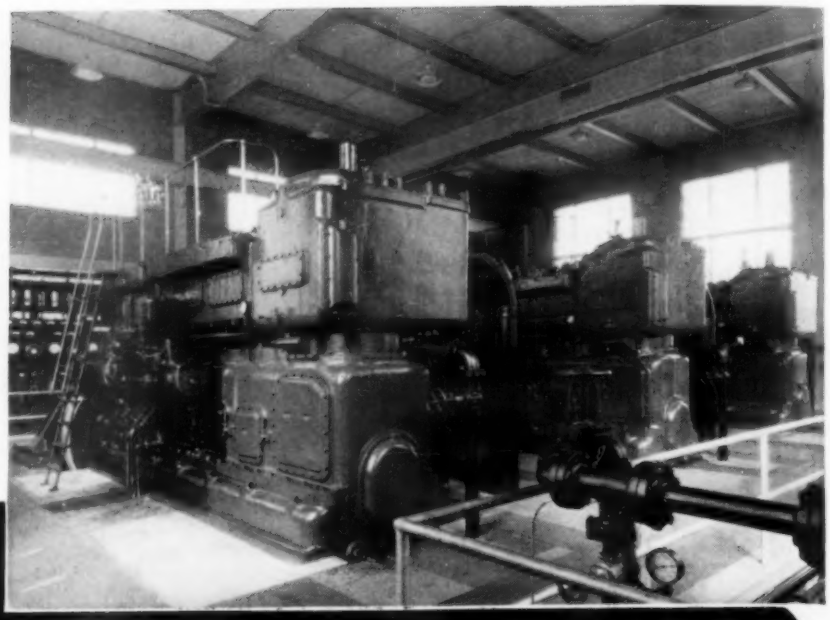
WHILE the gasoline tax was spending its sixteenth birthday earning some $565,000,000 for the states from the consumption of almost 15,500,000,000 gallons of this energy-producing essence, the various state legislatures were doing what they could to make the law more popular and, with one exception, the tax rate, itself, more in line with general practice.

According to a tabulation just made by the American Legislators' Association, four states, during the 1935 legislative sessions, raised the tax 1 cent: Delaware and Pennsylvania from 3 to 4 cents; Nebraska from 4 to 5 cents; and Florida, from 7 to 8 cents. Florida's tax is now the highest, and is much higher than what might be called an average tax for all the states—around 4 cents. One state—Tennessee—charges a tax of 7 cents; one state has a rate of 6½ cents; five states have 5-cent rates; 17 have 4-cent rates; and 10 states, 3-cent rates.

Exemptions, broadened definition of the gasoline tax laws and a few unusual provisions are features of the 1935 gasoline tax legislation. Exemptions generally favor principal industries in those states allowing them. Kansas has exempted from the tax gasoline used in interstate aviation. North Dakota exempts farm machinery, and Oklahoma allows a refund for tax on gasoline used for agricultural purposes. Maryland refunds the tax on gas used for motor boats. Two unusual exemptions are noted in the ALA report: Oregon refunds the tax on fuel used by vehicles owned and operated by municipalities of 100,000 population and over (meaning Portland, only); and Utah exempts from taxation gasoline made from Utah coal shales. Two more new exemptions are noted: Wisconsin exempts industrial users, and South Dakota, motor-busses operating exclusively under franchise within city limits.

Michigan has broadened its definition of gasoline to include blended products and any liquid used for the propulsion of motor vehicles, airplanes or motorboats. Montana now defines gas as any fuel capable of operating vehicles on highways. Washington specifically places a ¼-cent tax on each gallon of fuel oil or diesel oil produced.

Other features of the 1935 gas tax laws are found in Arkansas and Indiana. The former state has provided that in cities or towns or the area within 300 feet of the state line the tax charged in the neighboring state shall be collected in Arkansas. Indiana has made gas tax payments a lien on the distributor's property, a provision found in a number of other states.



With a total current cost of 7.38 mills at the switchboard, the Bloomington, Ill., Municipal Power and Light Plant shows a substantial profit selling power for domestic use as low as 3c per kwh., and for cooking and commercial power down to 2c per kwh.

BLOOMINGTON, ILLINOIS [POPULATION 30,900]

Cuts Power Costs 78% WITH F-M DIESELS

Many cities now using expensive or wastefully obsolete power plants have thought Diesel power suited only for small towns, and hardly adapted for big city service.

Although Bloomington, Ill., population 30,900, has operated its own municipal plants since 1889, never have costs per kwh. been so low.

When it was decided to replace the old steam plant with a modern Fairbanks-Morse Diesel-equipped plant, the old operating figures showed a cost of 3.29 cents per kwh. Today that figure has been slashed to 7.38 *mills* per kwh. despite a heavily increased load. The 78% saving in operating cost will soon pay for the cost of the plant, enabling further rate cuts to be made—or permit the city to enjoy even more free services such as power for street lighting, water supply, sewage and sanitation.

If *your* city is paying far too much for its power—if a wastefully obsolete plant is keeping costs far too high, it will pay you to get the facts on how other progressive municipalities are profiting with F-M Diesels. For complete information, address Fairbanks, Morse & Co., 900 S. Wabash Ave., Chicago, Ill. 32 branches at your service throughout the United States.

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Prepared by
FRANK B. WILLIAMS
Author of "The Law of
City Planning and Zoning"

ZONING and PLANNING NOTES

From Data collected
by the Zoning Committee
of New York
(233 Broadway)

Boards of Appeals

NEW JERSEY.—*Somers v. Borough of Bradley Beach*, 178, Atl. 755 (Court of Errors and Appeals, May 17, 1935).—The appellant Somers desires to erect a gasoline and oil filling station on a plot of land which is zoned as "non-commercial." In the immediate neighborhood is unrestricted territory upon which are many commercial uses. The enabling act under which the ordinance was enacted was passed by virtue of an amendment of the state constitution authorizing zoning. The statute provides that the governing body of the municipality enacting the zoning ordinance shall provide for the appointment of a board of adjustment which may make special exceptions to the terms of the ordinance; and the Court holds that an ordinance like the present one which does not so provide is void and of no effect.

The board of adjustment has an essential place in the legislative scheme. Such a board is a quasi-judicial body. The statute contains provisions for creating drastic limitations upon the uses to which an owner may put his property; and as a part of the scheme the Legislature commanded that a governing body in passing a zoning ordinance should provide for the appointment of this quasi-judicial body. That mandate has been wholly ignored in the borough of Bradley Beach. The property owner was deprived of a process provided by statute; and for that reason the ordinance is void.

Boards of Appeals—Practical Difficulties

NEW YORK.—*Matter of Levy v. Board of Standards and Appeals of the City of New York.* (Court of Appeals, May 21, 1935).—This is an application to erect a gasoline service station on a vacant lot. The rear 25 feet of the lot is in an unrestricted district; all the remainder of the lot is in a business district, and under the restrictions imposed by the zoning ordinance no gasoline service station may be erected or maintained there. The Board of Standards and Appeals granted an application for a variation from the restriction, allowing the erection of the service station. The Board finds that the streets on which the lot is located are heavily traveled streets, with trolley tracks on both streets. A commercial use of this corner would not be good judgment. It may be that the premises cannot at present be put to any other profitable use. Is the variance then justifiable?

The only facts disclosed by the record relate to the conditions in the district where the property is situated. So far as appears, they apply to all the pieces of the property which front on the streets in question and which are subject to the general rules restricting the use of premises in a business district. A restriction upon the use of property which excludes not only the most profitable use, but also any other use consonant with good judgment, unquestionably causes hardship to the owner. Such a restriction, created by statute or ordinance, may indeed exceed the legislative power of the state and be void. (Compare *Dowsey v. Village of Kensington*, 257 N. Y. 221.) Here, however, the owner does not challenge the validity of the general restrictions created by the zoning ordinance. He asks for a dispensation from the letter of the restrictions otherwise applicable to his property.

The power of the Board of Standards to grant in a specific case a variation or dispensation from a provision of a zoning ordinance is strictly limited. No right has been conferred upon the Board to amend the Zoning Resolution or change the boundary lines of districts. It may only grant a dispensation in specific cases where strict enforcement of the letter of the Zoning Resolution would cause practical difficulties or unnecessary hardship. Only where the burden of a general restriction creates a special hardship upon a particular owner can the grant of a special privilege to him in truth promote equal justice. That is not shown here. The Board of Standards and Appeals has granted a variation upon proof and finding of hardship due to general conditions existing in the neighborhood which may call for the exercise of legislative action amending the rule, but for which exemptions cannot be granted by an administrative board like the Board of Standards and Appeals. Its power is confined to relief in a proper case from hardship unnecessarily caused by the application of a general restriction to a particular piece of land. It may not destroy the general restriction by piecemeal exception of pieces of land equally subject to the hardship created by the restriction, nor arbitrarily grant to an individual a special privilege denied to others.

Relief from general rules which are shown to be unwise by experience or change of conditions must be through appeal to the legislative authority, or in extreme cases where the rule has become confiscatory, by challenge in the courts to the continued validity of the rule. There can be no relief in such cases by appeal to an administrative board vested with limited powers.

EDITOR'S NOTE.—See in this connection the similar New York case of *Young Women's Hebrew Association v. Board of Standards and Appeals*, given in our Notes for May, 1935.

America Well Represented at International Housing and Town Planning Congress

IN the fine new building of the Royal Institute of British Architects, July 15-20, under the auspices of the International Federation for Housing and Town Planning, was held the 14th International Housing and Town Planning Congress. With John Nolen as President of the Conference, and Lawrence Veiller as chairman of one of the housing sessions, America was well represented both in the chair and in the audience. Among the delegates from the United States were:

Charles Abrams, New York
Mr. and Mrs. Alfred Bettman, Cincinnati
Walter H. Blucher, Chicago
Louis Brownlow, Chicago
James D. Dusenberry, Washington, D. C.
Mr. and Mrs. George Gove, New York
Fritz Guttheim
Jacques Hébrar, Ann Arbor
Walter Krusi, Brooklyn, New York
Mrs. S. Kuhn, Cincinnati
Miss Loula D. Lasker, New York
Bleecker Marquette, Cincinnati
Albert Mayer, New York
Mrs. Herbert E. Mitler, New York
Mr. and Mrs. Guy Moffett, New York
John Nolen, Cambridge
Mr. and Mrs. Sherwood Reeder
Henry S. Rosenthal, Cincinnati
Werner Ruchti, Los Angeles
L. Segoe, Cincinnati
H. A. Spencer, Washington, D. C.
Lawrence Veiller, New York
Coleman Woodbury, Chicago

The principal subjects discussed at the various sessions included "Rehousing the People," "Positive Planning," "Planned Rural Development and the Preservation of the Countryside," and "Town Planning in Relation to Aviation." During the week of the Congress, visits were made by motor coaches to the garden cities of Letchworth and Welwyn and to various London housing schemes. The following week a tour was arranged which enabled the delegates to inspect slum clearance, rehousing and town planning projects in Leeds, Manchester, Bolton, Liverpool and Birmingham.

Aid to Housing Liberalized

A MORE liberal basis for financing Federal slum clearance and low-rent housing projects was announced by Secretary Ickes on July 8. The new regulations provide that the recently-authorized PWA grant of 45 per cent of total cost shall apply to housing in place of the old 30 per cent of the cost of labor and materials. The interest to be charged on the remaining 55 per cent loan will not exceed 3 per cent, and amortization of the loan will take place over a period not to exceed 60 years instead of over a 45-year period as under previous regulations. Land cost will not be included in the capital cost to be amortized. Instead, each project will carry a 3 per cent annual land rent. The purpose of the new regulations is to bring about a considerable reduction in rents to be charged in the Federal projects.

Perchloron

Greater SAFETY *for* SWIMMING POOLS

Wise pool owners everywhere are using Perchloron in their pools. They also use it in shallow foot baths to prevent the spread of athlete's foot . . . As a bleach and sterilizer in rinse water for towels and bathing suits...And in spray and powder form as an effective deodorizer and disinfectant.

Perchloron contains more than 70% available chlorine . . . Is easy to use . . . Always stable . . . Gives a uniform solution ...Requires no technical supervision...Is conveniently packed (1 dozen cans to the case) . . . No return containers to bother with . . . and *the cost is little.*

Perchloron is an American product for American users.

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Est. 1850

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Branch Sales Offices: New York—Chicago—St. Louis—Pittsburgh—Tacoma—Wyandotte

Water Rates and Service Charges, Installation Charges, Hydrant Rentals and Sprinkler Costs—XVI

Abstracts of Water Departments and Company Reports

Warren, Ohio

Population		49,000
"	served	42,000
Number of	services	10,312
" "	meters	9,782
" "	hydrants	672
Miles of water main		112.48

The monthly and quarterly meter rates are as follows:

First	800 cu. ft.	$ .30 per 100 cu. ft.	
Next	1,200 " "	.25 " " " "	
"	2,000 " "	.20 " " " "	
Over	4,000 " "	.12 " " " "	
First	2,400 " "	.30 " " " "	
Next	3,600 " "	.25 " " " "	
"	6,000 " "	.20 " " " "	
Over	12,000 " "	.12 " " " "	

The minimum charge, based on the size of the meter and varying for monthly and quarterly bills, is as follows:

⅝"	meter	$ .90 per mo.	$2.70 per quarter
¾"	"	1.50 " "	4.50 " "
1"	"	1.80 " "	5.40 " "
1½"	"	2.50 " "	7.50 " "
2"	"	3.20 " "	9.60 " "
3"	"	4.20 " "	12.60 " "
4"	"	5.50 " "	16.50 " "
6"	"	7.50 " "	22.50 " "
8"	"	10.00 " "	30.00 " "

Water meters are furnished and set by the Water Department, and on property where there is no cellar or no suitable place for a meter, a meter box or meter vault at the expense of the property owner. Water rates are due and payable monthly or quarterly, as billed, on or before the 10th day after the date of bills. If not paid when due, the water supply is discontinued and is not resumed until all past accounts are paid, including a charge of $1 to cover the cost of resuming service.

Applications for the installation of water services must be made in writing at the Water Department office on special blanks and must be signed by the owner of the property or his agent. All service connections or pipe for supplying water from the city main are installed at the expense of the property owner. For ordinary house service extra-heavy ⅝" or ¾" lead pipe is used from the main to the shut-off between the curb and sidewalk; for 1", 1¼" and 1½" lead pipe extra-extra in weight is used; and for all service pipe larger than 1½" cast iron pipe is used through the property line, and brass pipe from the property line to the meter. No single service is permitted to serve more than one meter except in special cases, which must be approved by the Superintendent of the Water Department.

There is no charge for public fire hydrants. The charge for 2-way private fire hydrants is $3.00 each per month, and for 3-way hydrants, $3.33 each per month. Hydrants with 2½" hose openings are charged at $1.50 each per month, and the minimum charge per connection for automatic sprinklers is $3.50 per month. There is no charge for a fire service line less than the amount of water passing through the meter or detector meter at the regular schedule of rates.

The installation of fire extinguisher service connections to supply water to sprinkler systems or private fire hydrants for fire extinguisher only, is permitted only when applications and plans for the services have been submitted to the Water Department and approved by the Superintendent. No connection larger than 6" in diameter is allowed, and the installation of a detector check arranged for a by-pass meter, or a full-sized meter set in a concrete meter vault with an iron cover and the vault drained to the sewer, is required. The Water Department furnishes all material and does all work necessary for the installation of fire extinguisher services from the main to the curb, at the expense of the property owner. When any premises have one or more fire service connections each service must be equipped with a check valve so set that water can flow into the premises but cannot flow out.

C. I. Inman,
Superintendent and Commissioner.

Seattle, Wash.

Population		365,583
"	served	448,926
Number of	services	under 96,000
" "	meters	81,623
" "	hydrants	9,678
Miles of water main		1,006.01

The basic meter rates are 50c per month for a consumer using 500 cu. ft. or less. The charge is 6c per 100 cu. ft. for all water used in excess of the minimum.

The special rates and charges include a minimum rate of 50c per month per building, where two or more separate buildings are supplied by the same meter. Manufacturing plants, laundries, golf courses, motors, elevators, School District No. 1, Port of Seattle, Fort Lawton Military Reservation, King County Harborview Hospital, King County Home, U. S. Naval Station at Sand Point and the University of Washington pay a rate of 4c per 100 cu. ft. for all water used in excess of 30,000 cu. ft. The City Light Department and the municipal street railway pay 4c per 100 cu. ft. The rates for metered water supplied to premises outside the city limits is $1.00 for 700 cu. ft. or less per month, with a minimum charge of $1.00 for each separate premises or building connected to an existing metered service, where 700 cu. ft. or less is used. All water above 700 cu. ft. for each separate premises or building up to 200,000 cu. ft. is charged at 10c per 100 cu. ft. and all water in excess of 200,000 cu. ft. is billed at 8c per 100 cu. ft. Where there is a provision that where more than 80% of the water consumed through any metered service is used for manufacturing and industrial purposes, a special rate of 10c per 100 cu. ft. for the first 30,000 cu. ft. and 7c per 100 cu. ft. for all water over 30,000 cu. ft. is made.

The rates for metered water service outside the city limits are effective when a contract is signed by the water consumer agreeing to take water service from the city of Seattle for a period of not less than three years. Until such an agreement has been signed, the rates for metered water service outside the city are $1.00 for 500 cu. ft. or less per month, with a minimum charge of $1.00 for each separate building or premises connected to the existing metered service.

All meters are read monthly, but ½- and ¾-inch meters are billed quarterly unless more than one building or premises is supplied through the meter, in which case the reading is billed monthly, as are all other sized meters. The quarterly billings include three minimum charges; thus, if a consumer uses 500 cu. ft. or less in one month, the bill is 50c, or if he uses only 500 cu. ft. in three months, the bill is $1.50. If he uses 700 cu. ft. the first month, the billing would be 60c; then if he used 300 cu. ft. the second month, the charge would be 50c; and if he used 800 cu. ft. the third month, the charge would be 70c, making a quarterly bill of $1.80.

The Water Department makes all taps and runs the service pipe from the main to the property line, if the main is in front of the property. If not, the tap is made and a meter set in the most con-

"—the salesman for any industry to the municipality."

Office of City Engineer
CITY HALL
New Castle, Indiana

April 4, 1935

Mr. Edgar J. Buttenheim,
President & Manager,
The American City Magazine,
470 Fourth Avenue,
New York City, New York

Dear Mr. Buttenheim:

Received your Municipal Index, of which I am mighty proud, as well as the entire office force.

The Municipal Index is the best guide in our office, for there is hardly a thing to be purchased for the city of New Castle, that the purchasing department, if not acquainted with the firm handling the article, does not refer to The Municipal Index and run through it for a possible clew.

It seems to be the best method of condensing the various catalogs of manufacturers that makes it so convenient to contact the right firm, and I surely wish you success in a more complete and larger edition next year.

To me, it is the salesman for any industry to the municipality.

Yours very truly,

Ernest L. Guyer.

Ernest L. Guyer,
City Engineer

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Mention THE AMERICAN CITY—it helps.

venient place for both the Water Department and the property to be served, and then the property owner runs his service pipe from the meter or from the end of the pipe out of the meter which has been laid by the Water Department.

The charge for a ¾-inch tap in an unpaved street with 40 ft. of pipe or less is $15. The charge for a 1-inch tap in an unpaved street with 40 ft. of pipe or less is $18. Where pipes larger than 1-inch are made, or where it becomes necessary to open a paved street, the actual cost of the labor and material plus 12% for overhead is charged. The Water Department furnishes the meter without cost to the consumer, and its maintenance costs are also borne by the Water Department.

There are no public or private fire hydrant rentals, and no sprinkler charges are made for private services connected only to sprinkler systems for fire protection.

H. D. Fowler,
Superintendent of Water.

Springfield, Ill.

Population	78,000
" served	78,000
Number of services	21,315
" " meters	17,403
" " hydrants	1,253
Miles of water main	165.9

The water rates based on monthly consumption are as follow:

First	3,000 cu. ft. or less per mo.	$0.17½ per 100 cu. ft.
Next	5,000 " " " "	.12½ " " " "
"	8,000 " " " "	.10 " " " "
"	14,000 " " " "	.08 " " " "
All over	30,000 " " " "	.07 " " " "

The minimum monthly charge is based on the size of the meter, as follows:

⅝" meter	$ .50
¾" "	.75
1" "	1.00
1¼" "	2.00
1½" "	3.00
2" "	6.00
3" "	8.00
4" "	10.00
6" "	20.00

Taps and water connections to the mains are made only by the Water Department. The excavation of the trench and the laying of the service pipe may be done by employees for the agent of the consumer. Service pipe must be placed at least 42" below the surface of the ground. No person is permitted to connect a water pipe into two distinct premises from one service unless separate and distinct sidewalk stop cocks are placed for each premises. All services must be kept in repair by the consumer. The water services, including the pipe and tapping of the water main, the corporation cocks, the curb key, and curb box and stop cock, are furnished and installed by the Water Department if desired by the consumer. The cost of furnishing and laying ¾" pipe a distance of not more than 35 ft. is $18. The charge for larger services or services of greater length is merely the additional cost to the city. For furnishing and laying ¾" pipe from the curb box to the point on the premises where the meter is to be placed, a distance not to exceed 50 ft., a charge of $15 is made, and any additional cost is charged to the consumer.

The consumer must pay at least $10 in advance for any water service, and the remainder may be paid in monthly installments of not less than $2 on such dates as bills are due and payable. When the total cost of either or both such services exceeds the sum of $35, then the advance payment is increased up to $25. Also, if the full amount of the cost is paid in advance, there is a discount of 10% on that portion of the cost which may be paid in installments. It is further provided that when a service is laid from the main to the curb box for future use and not for immediate use, the full amount of all charges must be paid in advance.

There is no hydrant rental charge for public hydrants used by the city of Springfield.

Willis J. Spaulding,
Commissioner of Public Property.

Mt. Clemens, Mich.

Population	13,484
" served	13,484
Number of services	3,426
" " meters	3,410
" " hydrants	394
Miles of water main	47.0

All property in the business district is billed monthly, and consumers in the residence district are billed quarterly. The quarterly meter rates are:

$2.70 for first 1,500 cu. ft. for ⅝" meter
.15 per 100 cu. ft. for the next 4,500 cu. ft.
.13 " " " " " " 12,000 " "
.11 " " " " " all water used over 18,000 cu. ft.

Minimum rate—90 cents per mo.
Out-of-town residents, additional 50 per cent

The monthly business district rates are:

$0.90 for first 500 cu. ft. for ⅝" meter
.15 per 100 cu. ft. for the next 1,500 cu. ft.
.13 " " " " " 4,000 " "
.11 " " " " " all water used over 6,000 cu. ft.

Minimum rate—90 cents per mo.
Out-of-town residents, additional 50%

The installation charges are based on the size of the tap, and the following rates are in force where service is laid in dirt streets:

⅝" tap	$24.00
¾" "	27.50
1" "	30.00
1½" "	32.50

The charge for all taps and service lines over 1½" diameter are the time and material. Where taps on service lines are laid under paved streets, the charges are also for time and material.

There is no charge for public fire hydrants, but private hydrants are billed at $25 each per year.

J. A. Keils,
Superintendent.

Austin, Texas

Population	58,000
" served	60,000
Number of services	13,807
" " meters	13,807
" " hydrants	1,150
Miles of water main	168.5

The monthly water rates are as follows:

First	1,500 gals.	50c (minimum charge)
Next	2,000 "	70c per 1,000
"	12,500 "	25c " "
"	34,000 "	20c " "
"	200,000 "	15c " "
"	300,000 "	12c " "
Over	550,000 "	11c " "

Bills are due within 20 days after the date carried at the top of the bill.

The following table shows the tap, meter and compound meter deposit for various sizes of services, and the minimum charge per month:

Size	Tap Deposit	Meter Deposit	Compound Meter	Min. Chg. per Mo.
⅝"	$ 2.50	$ 8.40	$	$ .50
¾"	5.00	12.60	.....	.50
1"	10.00	20.00	.....	3.00
1¼"	15.00	30.00	.....	4.75
1½"	20.00	40.00	.....	6.75
2"	30.00	62.50	82.50	12.00
3"	50.00	100.00	163.00	27.00
4"	75.00	200.00	261.70	48.00
6"	100.00	400.00	543.60	108.00
8"	150.00	.....	815.10	192.00

The compound meter deposit is larger than for disc meters. These deposits are required only after a careful study of the demands of the customer. The tap charge covers the amount required of the customer for a complete service from the main to the inside of the curb, and includes the meter box and curb cut-off. The minimum charge allows a corresponding amount of water as shown in the rate schedule.

The city of Austin does not pay the Water Department for fire hydrant service.

For automatic fire sprinkler services the customer pays the entire cost of installation, there being no stand-by charge for this type of service.

Albert R. Davis,
Superintendent, Light, Water and Power Department.

Traverse City, Mich.

Population	14,000
" served	12,000
Number of services	3,135
" " meters	2,840
" " hydrants	350
Miles of water main	40

The schedule of water rates, payable quarterly, for Traverse City is as follows:

First	6,000 cu. ft.	60c per 1,000
	6,000 " " to 12,000 cu. ft.	52½c " "
	12,000 " " " 60,000 " "	45c " "
	60,000 " " " 120,000 " "	37½c " "
	120,000 " " and over	30c " "

The minimum bill is $1.75, which includes the meter rental of 25c for each quarter, or $1.00 per year. All bills must be paid at the City Treasurer's office on or before the 15th of the month in which they are used.

The charge for the installation of services from the city main to the curb complete is as follows:

For ⅝" and ¾" services	$10.00
" 1" " 1¼" "	15.00
" 1½" " 2" "	25.00

Meter installation charge, $1.00.

The city pays the Water Department $20 per year for each fire hydrant connected to the water mains. There is no charge for private sprinkler systems, for all such systems are metered.

W. S. Williams,
Superintendent, Water Department.

LEADERSHIP

IS A PRIVILEGE...NOT A RIGHT

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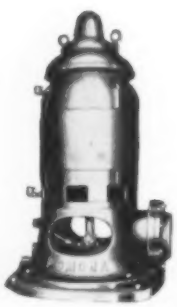
If in 1930 Pomona engineers had declared: "Pomona is now the outstanding pump,—we can get along with fewer engineers, fewer research and field men"—Pomona would not have retained its leadership. Today it would have ceased to be a leader.

Instead of lessening research and experiments, the manufacturers of Pomona Pumps have constantly expanded them. Each year the work of power analysis, pump analysis and design analysis, upon which Pomona's original leadership was founded, has been continued in a constantly widening scope as new needs and new conditions have arisen.



When you buy a Pomona Pump this means long life, smooth operation and economy. It means for you a sense of confidence. It means for the Pomona organization a knowledge that Pomona Pumps will yield a full measure of service.

POMONA PUMP CO.

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POMONA

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71 POUNDS

Complete with Gasoline Engine

You can speed night construction and emergency repairs with the newly developed Homelite 650-watt light and power plant. It weighs only 71 pounds complete with a built-in, air-cooled gasoline engine. A man can easily carry it wherever it is needed. This advanced Homelite plant has a high-tension, waterproof magneto that shoots a hot spark and makes starting easy. The air-cooled engine cannot overheat or freeze. Contractors, municipalities, utility companies and fire departments are all finding it profitable to use Homelite Portable Generators (made in two capacities, 650 and 1250 watts) for floodlighting night work and operating electric tools. These portable units save both time and money.

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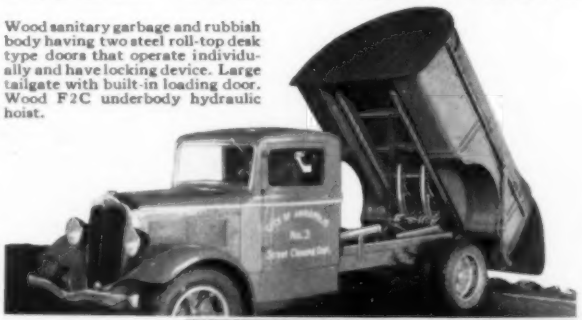

Wood modern fully enclosed type garbage body with sliding steel covers operating on steel rollers. Tailgate is watertight and body floor slopes at rear. Capacity 4½ cu. yds. to loading side. Wood F1C underbody hydraulic hoist.

Write for Bulletin No. 12 showing a complete line of garbage and rubbish bodies.

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FACTORY BRANCHES AND DISTRIBUTORS IN 51 CITIES

Manufacturers of Hoists • Dump Bodies • Truck Tanks • Truck Winches • Cranes Pole Derricks • Power Take-offs • Repair Towers

Thomasville, Ga.

Population	11,000
" served	13,000
Number of services	1,685
" " meters	1,685
" " hydrants	202
Miles of water main	27.0

The schedule of water rates for Thomasville is as follows:

First 40,000 gals.	20c per 1,000 gals.
Over 40,000 "	12c " " "

The minimum monthly charge for water is $1.11. There is a 10% discount on a bill above the minimum charge for payment by the 10th of the month.

All meters are owned by the city. The city carries all service lines across the sidewalk to the consumer's property line, thus eliminating all excavation by private plumbers. The charges for taps are:

¾"	$10.00
1"	15.00
1"	20.00

For sizes larger than 1", an estimate is made of the total cost, and the consumer pays this amount in advance. Lead goosenecks are no longer used. Copper service pipe is used on all work under pavement, and copper goosenecks with galvanized pipe on dirt streets.

There is no charge to the city for hydrant service, and there are no sprinkler charges for private fire protection lines except the initial cost of the connection.

D. R. PRINGLE,
Superintendent, City of Thomasville Water and Light Department.

Waukesha, Wis.

Population	17,200
" served	17,200
Number of services	4,071
" " meters	4,189
" " hydrants	415
Miles of water main	53.6

The water rates in Waukesha are as follows:

COMMERCIAL RATES

First	15,000 gals.	@ 30c per	1,000 gals
Next	10,000 "	@ 25c "	" "
"	25,000 "	@ 20c "	" "
"	300,000 "	@ 15c "	" "
All over above		@ 10c "	" "

INDUSTRIAL RATES

First	5,000 gals.	@ 30c per	1,000 gals
Next	3,000 "	@ 25c "	" "
"	8,000 "	@ 20c "	" "
"	100,000 "	@ 15c "	" "
"	300,000 "	@ 10c "	" "
"	584,000 "	@ 7c "	" "
All over 1,000,000	"	@6½c "	" "

Minimum charge per quarter, ¾" meter or under, $2.00. Consumers having meters larger than ¾" are assessed the same minimum as industrial users.

Industrial water collections are made each month.

A. P. KURANZ,
Superintendent, Waukesha Water Department.

Adrian, Mich.

Population	13,000
" served	13,000
Number of services	3,356
" " meters	2,844
" " hydrants	189
Miles of water main	41.0

There is a minimum charge of $2.50 per quarter for all metered services in Adrian, and a discount of 10% is allowed for prompt payment. Residential meters are read quarterly, and commercial meters are read monthly. The meter rates are:

1 to	1,000 gals. per day	32c per	1,000 gals.
1,000 "	2,000 " " "	24c "	" "
2,000 "	4,000 " " "	19c "	" "
Over	4,000 " " "	16c "	" "

The municipal meter rate paid by all city departments using water is 16c per 1,000 gals. for any quantity used. The city pays the Water Department $15 per year for each fire hydrant. There is a charge of $15 per year for each automatic sprinkler system used for fire protection with 6- or 8-inch supply connections. No meter is required.

F. B. SMART,
Secretary, Adrian City Water Board.

Livingston, Mont.

Population	6,391
" served	6,500
Number of services	1,650
" " meters	550
" " hydrants	152
Miles of water main	19

The rate schedule for domestic and commercial services where meters are installed is as follows:

First	4,000 gals.	@ 25c per	1,000 gals.
Next	2,000 "	@ 25c "	" "
"	4,000 "	@ 15c "	" "
"	15,000 "	@ 10c "	" "
"	475,000 "	@ 9c "	" "
Over	500,000 "	@ 7c "	" "

The minimum meter charges per month are:

⅝"	$ 1.00
¾"	1.50
1"	3.00
1½"	6.00
2"	10.00

J. R. CORTESE,
Water Superintendent.

Walla Walla, Wash.

Population	16,000
" served	17,500
Number of services	4,984
" " meters	2,712
" " hydrants	332
Miles of water main	80.0

The monthly schedule of meter rates for consumers using water within the city limits are:

3,750 to	20,000 gals.	$0.20 per	1,000 gals
20,000 "	100,000 "	0.12 "	" "
100,000 "	1,000,000 "	0.10 "	" "
All over	1,000,000 "	0.08 "	" "

The minimum charge per month for metered service where a ¾" line is used is 75c, permitting the use of 3,750 gals. of water, where the meter is owned by the consumer and where the water is used within the limits of the city. Where two or more houses are on one metered service, at least the minimum charge is made for each house. The minimum charge per month for a ¾" service where the meter is owned by the city is $1.75, and if more than the minimum amount is used, a meter rental fee of $1.00 per month is charged in addition to the regular water rate. For metered services over ¾", the minimum charge per month is:

1" service	$ 1.50
1¼" "	2.00
1½" "	3.00
2" "	4.00
3" "	5.00
4" "	7.50
6" "	10.00

For a metered service over ¾" where the meter is owned by the city and where more than the minimum amount of water is used, a meter rental fee is charged in addition to the regular water rate.

The following monthly schedule of water rates is charged by the city to consumers using water outside the city limits:

3,750 gals. to	10,000 gals.	$ 37½ per	1,000 gals
10,000 " "	20,000 "	30 "	" "
20,000 " "	100,000 "	18 "	" "
100,000 " "	1,000,000 "	15 "	" "
All over 1,000,000 gals.		12 "	" "

The minimum charge per month for a metered service of ¾" size is $1.35, which permits the use of 3,750 gals. of water. Where two or more houses are on one metered service, the minimum charge is made for each house. For metered services over ¾" in size, the minimum charge per month is:

1" service	$ 2.25
1¼" "	3.00
1½" "	4.50
2" "	6.00
3" "	7.50
4" "	11.25
6" "	15.00

All charges for service outside the city are due and payable monthly on the first day of each month and are delinquent on the 15th day of that month.

There is no charge for public fire hydrants. The annual charge on fire lines when they are not metered is based on the size of the line as follows:

1½"	$5.00 per year
2"	6.00 " "
3"	9.00 " "
4"	12.00 " "

If the fire lines are not metered, they must be kept sealed.

R. F. MCLEAN,
Superintendent.

South Saint Paul, Minn.

Population	12,000
" served	Unknown
Number of services	2,021
" " meters	2,002
" " hydrants	315
Miles of water main	28.7

The schedule of water rates for South Saint Paul is as follows:

Up to 50,000 gals.		22c per	1,000 gals.
From 50,000 to	100,000 gals.	20c "	" "
" 100,000 "	200,000 "	16c "	" "
" 200,000 "	300,000 "	14c "	" "
" 300,000 "	400,000 "	13c "	" "
Over 400,000 gals.		11c "	" "

The above rates apply to the amount of water consumed during any quarter.

A minimum charge of 66c per quarter is made if the consumption does not exceed that amount.

There is a charge of $9 per hydrant per year made to the city. The city pays 9c per load for water used for street sprinkling and other street purposes.

W. H. CROPSEY,
City Engineer and Superintendent, Water Department.

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ALLIS-CHALMERS

TRACTOR DIVISION—MILWAUKEE, U. S. A.

THE CITY'S LEGAL RIGHTS AND DUTIES

Conducted by A. L. H. STREET, Attorney at Law

Accidents

Notice of personal injury suit, addressed to Clerk instead of city, held fatally defective (Iowa Supreme Court: *Barton v. City of Waterloo*, 255 N. W. 700).

City sued for injury caused by hole in street left by water company held entitled to bring the company in as defendant primarily liable (Pennsylvania Superior Court: *Rudman v. City of Scranton*, 173 Atl. 892).

Attorneys

City attorney held ordinarily possessed of same power to bind city that attorneys in general usually have in acting for their clients (New York Supreme Court, Bronx County: *Beechwood Gun Club v. City of Beacon*, 275 N. Y. Supp. 249).

Bond Issues

Taxpayer's suit to enjoin issue of water-works bonds held properly dismissed, statute authorizing appropriations in aid of operating expenses being valid (Alabama Supreme Court: *Bankhead v. Town of Sulligent*, 155 So. 869).

Electric distribution system bonds payable from revenue held not within constitutional debt limit and not to require electoral assent (Alabama Supreme Court: *Oppenheim v. City of Florence*, 155 So. 859). Similar decision as to water-works bonds by same Court (*Smith v. Town of Guin*, 155 So. 865).

Authority of officers to issue bonds held not subject to collateral attack by resident because of unconstitutionality of charter provision limiting suffrage in official elections to property owners where such elections had been held without objection (North Carolina Supreme Court: *Smith v. Toun of Carolina*, 175 S. E. 313).

Bonds issued for sewer system ordered by State Board of Health held valid even if exceeding statutory debt limit; exemption of bonds for "water purposes" from debt limit held to extend to bonds for water and sewer systems (North Carolina Supreme Court: *Lamb v. City of Randleman*, 175 S. E. 293).

Civil Service

Detective sergeant suspended while under indictment for conspiracy to violate prohibition act held not entitled to writ compelling payment of salary (Nebraska Supreme Court: *State v. Towl*, 257 N. W. 263).

"Partisan political activity" held not sufficient specification of ground for discharging employee (Ohio Court of Appeal, Cuyahoga County: *State v. Eirick*, 192 N. E. 172).

Contracts

In assessing damages against a city for wrongfully terminating a building contract, contractor's freedom to engage in other enterprises and his use of equipment on other jobs after termination of the contract held properly considered (New York Supreme Court, Appellate Division: *Louvin Realty Corp. v. City of New York*, 272 N. Y. Supp. 752).

Contract for purchase of materials held void for want of authority from Council and certificate of Director of Finance that funds were on hand (Ohio Court of Appeals, Lucas County: *Hawley v. City of Toledo*, 191 N. E. 827).

Taxpayers held entitled to recover on behalf of city money exorbitantly and unlawfully paid for repairs (North Carolina Supreme Court: *Moore v. Lambeth*, 175 S. E. 714).

State highway contractor held entitled to recover for extra work ordered by supervising engineer (Michigan Supreme Court: *A. J. Smith Construction Co. v. Marine City*, 255 N. W. 209).

Council Vacancies

Vote filling council vacancy held not subject to reconsideration after being completed and recorded (California District Court of Appeal: *MacAlister v. Baker*, 33 Pac. 2d, 469).

Depositories

City held liable for loss of state and county tax collections through failure of bank not legally designated as city depository (Michigan Supreme Court: *Ottawa County v. City of Holland*, 256 N. W. 851).

Drainage

City held liable for encroaching upon abutting property in widening drainage canal (Alabama Supreme Court: *City of Birmingham v. Corr*, 157 So. 56).

Elections

Charter limiting suffrage to property owners held unconstitutional (North Carolina Supreme Court: *Smith v. Town of Carolina Beach*, 175 S. E. 313).

Finances

Sinking-fund earnings held properly apportioned to fund earning same (Oklahoma Supreme Court: *Roberts v. Board of Education of City of Okmulgee*, 33 Pac. 2d, 496).

Water rental revenue held improperly used to pay for sewage disposal plant (Ohio Supreme Court: *Hartwig Realty Co. v. City of Cleveland*, 192 N. E. 880).

Statute authorizing state comptroller to examine city finances upheld (Florida Supreme Court: *Coen v. Lee*, 156 So. 747).

Food Regulations

Milk ordinance upheld (Iowa Supreme Court: *City of Des Moines v. Fouler*, 255 N. W. 880).

Licenses

$5 annual license fee against cigarette vendors upheld (Michigan Supreme Court: *Detroit Retail Druggists Assn. v. City of Detroit*, 255 N. W. 216).

Special Assessments

Street paving assessment held invalid for insufficient majority vote on resolution of necessity; assessments for sewer and water connections held invalid for want of plans and specifications and because twelve connections were provided for single unplatted tract (Iowa Supreme Court: *Seymour v. City of Ames*, 255 N. W. 874).

Taxation

Right of city to increase tax rate to meet needs arising after adoption of appropriation ordinance recognized (Illinois Supreme Court: *People v. Mills Novelty Co.*, 192 N. E. 236).

Ordinance providing for notice and protest of tax assessments upheld (Georgia Supreme Court: *Simmons v. Newton*, 174 S. E. 703).

City held not empowered to bring action in equity to foreclose tax lien (New York Supreme Court, Appellate Division: *City of Johnstown v. Wells*, 273 N. Y. Supp. 631).

Taxicab Regulation

Ordinance imposing $60 yearly license tax on each taxicab and requiring carrying of liability insurance upheld (Kansas Supreme Court: *People's Taxicab Co. v. City of Wichita*, 34 Pac. 2d, 545).

Ordinance requiring taxicab operators to furnish liability insurance, etc., held invalid as tending to create a monopoly and conflicting with state law (North Carolina Supreme Court: *State v. Sasseen*, 175 S. E. 142).

Traffic Regulations

Ordinance forbidding vehicular traffic on section of street held invalid as being designed merely for private benefit (California District Court of Appeal: *Simpson v. City of Los Angeles*, 38 Pac. 2d, 174).

Bus company held not entitled to enjoin ordinance regulating stops as being unconstitutional, no arrest having been made for any violation (Georgia Supreme Court: *City of Hartwell v. Old South Lines*, 177 S. E. 340).

Workmen's Compensation

Relief applicant given work on gravel pile held not entitled to award for injury claimed to have been sustained in course of work (Michigan Supreme Court: *Cody v. City of Negaunee*, 259 N. W. 118).

Swimming pool supervisor held covered by Compensation Act as municipal "employee," and not independent contractor (Nebraska Supreme Court: *Schou v. Village of Hildreth*, 257 N. W. 70).

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"It is the equivalent of two motors for every truck."
Pennsylvania Transfer Co.
Pittsburgh, Pa.

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"This particular unit is better adapted to our work than anything we have ever used."
H. J. Williams, Inc.
(General Contractors)
York, Penna.

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MUNICIPAL AND CIVIC PUBLICATIONS

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Unemployment Relief

Back to Work: The Story of PWA.—By Harold L. Ickes, Secretary of the Interior and Administrator of Public Works. The Macmillan Company, New York. 1935. *IX + 276 pp. Illustrated.* $2.50 *from* THE AMERICAN CITY.

Secretary Ickes has the power of making any accounting of projects clear and vital. In this survey of the two years of PWA, he not only gives a spirited story of the conception of the idea, its birth, its purposes and plans, its organization into action, its accomplishments, mistakes and existing hopes, but also in the telling assumes the reader's response to frankness and integrity. This is not a superficial compilation; it is a stimulating setting-forth of a great undertaking against a background many of whose details are now for the first time explained.

Economic Recovery

The Stagnation of Industry—Its Cause and Cure.—By Emil O. Jorgensen. James A. Bell Company, Elkhart, Ind. 1935. 225 *pp.* $2.00.

This book presents a strong case for the author's belief that: "If we repeal all taxation except that upon land values and thereby transfer this huge purchasing power from the land-holding groups to the consumers, these momentous problems of stagnant industry will be definitely disposed of. Not merely will business men everywhere be relieved of that cut-throat competition which springs from the investment of surplus ground rent in the field of industry, but the overwhelming majority of their customers will have a much greater ability to buy."

A section of the book of special interest to readers of THE AMERICAN CITY is Part III, giving the text of two bills "which propose to abolish over a five-year period all local taxes on improvements and personal property in Chicago and Cook County, and to increase the tax on the value of the bare land sufficiently to meet the budgetary requirements of all local governments"; and discussing in some detail the benefits which, in the author's opinion, would result from the adoption of these bills.

Regional Planning

"A Study of Wisconsin: Its Resources, Its Physical, Social and Economic Background" is the first annual report of the Wisconsin Regional Planning Committee, for the year 1934, continuing the first progress report, of September, 1934. It is an imposing volume of 501 photo offset pages, with many maps, charts, tables and color drawings, and has been prepared by the Committee, with the advantage of the resources and leadership of the National Planning Board. Studies of the population, resources and facilities of Wisconsin are presented in full detail, with the purpose of preventing unnecessary deterioration, and insuring coordination and wise economy in the development of the various subdivisions of the state. (Apply to the Committee, Madison, Wis.)

Local Government

The new English edition of the regular quarterly review of the International Union of Local Authorities is *Local Government Administration* (Vol. I, No. 1, June, 1935). This first issue, of 64 pages, contains, besides introductory and other editorial matter, articles on the International Union of Local Authorities and the Union of Dutch Communes; on the study and teaching of communal or urban science; "Local Self-Government under Hitler"; "The Government of Liverpool"; "The Chicago Group of Governmental Organizations," by Robert M. Paige, Assistant Director, Public Administration Clearing House; "Montreal Fire Center"; "American and British Local Administration Compared"; "Children's Care Center at Suresnes"; "Bombay Local Self-Government Institute." Annual subscription, £1 1s. (Address Office of British Committee, International Union of Local Authorities, 190, Palace Chambers, Bridge Street, Westminster, S. W.1, London, England.)

Water Works

An interesting report on the municipal water works of Milwaukee, Wis., has been prepared by H. P. Bohmann, Superintendent, for the local schools and the general public. It is illustrated with exterior and interior views of the different buildings and other structures of the system. The history of the works is given, the intakes from the source of supply—Lake Michigan—are described, and the method of purification by liquid chlorine is explained. It is stated that the construction of a water purification plant is now under way. The operation of pumping stations, reservoir, storage tanks, and distribution system is made clear. All water services other than those used solely for fire protection (automatic sprinkler systems) are under meter control. Instruction is given on how to read a water meter. Four pages of drawings show the plan and layout of the system. 23 pp. (Apply to the Superintendent of Water Works.)

"Investigation of Bell and Spigot Joints in Cast-Iron Water Pipes" (Part I, Pull-Out Strength; Part II, Bell Strength; Part III, Harness Strength) is the title of Engineering Experiment Station Bulletin No. 87 published January, 1935, by Ohio State University. It covers the tests made by Prof. John C. Prior, Professor of Civil Engineering, jointly for the Division of Water of Columbus, Ohio, the Cast Iron Pipe Research Association, and the Sectional Committee on Specifications for Cast Iron Pipe and Special Castings. 57 pp. 50c. (Apply to Ohio State University, Columbus, Ohio.)

Brick Paving

The twenty-ninth annual meeting of the National Paving Brick Association was held in Indianapolis, Ind., February 6-8, 1935. The Proceedings of the meeting have been issued in an illustrated pamphlet of 95 pages. Important papers and discussions in this field are presented. At the fourth general session there was a notable symposium on the manufacture of paving brick by the de-airing process. The Association states that experience now justifies the conclusion "that with proper production methods a new paving unit of greater strength and density which retains all the old advantages of regularity of shape is now available to the highway engineer." (Apply to the Association, National Press Bldg., Washington, D. C.)

Highways

The Proceedings of the Twenty-first Annual Road School, held at Purdue University, Lafayette, Ind., January 21-25, 1935, are published in the January *Engineering Bulletin* of the University. The work of compiling and editing has been done by Ben H. Petty, Professor of Highway Engineering. 117 pp. Illustrated. A broad program of papers on various factors of highway engineering was given, of interest and value to all who are working in this field. (Apply to Engineering Extension Department, Purdue University, Lafayette, Ind.)

Two pamphlets: "Outline for Low-Cost Road Improvement Through 'Stabilization' with Binder Soil and Calcium Chloride," 9 pp., illustrated; "Importance of Crown on Calcium Chloride Stabilized Roads," 18 pp., illustrated, by F. Burggraf, Materials Engineer of the Calcium Chloride Association. Both issued June, 1935. (Apply to the Association, Penobscot Bldg., Detroit, Mich.)

Sewage Treatment

Übersicht über die Abwasserreinigung in den Vereinigten Staaten (Review of Sewage Treatment in the United States).—By Dr.-Ing. Imhoff, Essen, Germany. A reprint from the weekly publication *Gesundheits-Ingenieurs*, May 4, 1935. 6 quarto pp., illustrated. (Apply to Dr. K. Imhoff, Hauptpostgebäude, Essen, Germany.)

Housing

Housing Problems and Possibilities in the United States.—By Frank Watson. Harper & Brothers, New York. 1935. 100 *pp.* $1.25 *from* THE AMERICAN CITY.

This little book meets the need for a compact and low-cost treatise concerned much more with the financial aspects of the housing problem than with discussions of site planning or structural design.

Although the author, former Acting General Counsel for the FHA, had much to do with the drafting of the National Housing Act of 1934, he states frankly his conviction that slums and low-cost housing are not susceptible of any form of trick financing which will make them self-supporting, if decent housing is to be supplied at rentals which the low 10 per cent of our population can afford. For this group Mr. Watson urges some form of governmental subsidy, but his interest is primarily in the field of private housing and home ownership. The size of the American housing market, construction cost and methods, needed reforms in our system of mortgage finance, interest rates, and the taxation of real property are among the subjects discussed.

Re-Housing

At the National Conference on Social Work, held in Montreal June 11, 1935, Paul L. Stannard, District Office Manager of FERA in Cuyahoga County, Ohio, delivered before the Housing Section a paper on "Relocation of Tenants Evicted from Housing Project Areas." This is an elaboration of former studies by the author on the subject, and proposes a six-point integrated re-housing program which he believes applicable, with minor variations, to almost any community. 5 mimeographed pp. (Apply to the author, 2650 St. James Parkway, Cleveland Heights, Ohio.)

Local Government

The Report of the Pennsylvania Local Government Survey, made possible by a grant of funds by the American Philosophical Society, has been published in the April, 1935, Transactions of the Society an imposing paper-covered volume of 483 photo offset pages. This assembling of authentic data concerning the present system, its practical operation, and its strength and weaknesses, is the necessary first step towards any readjustment or reorganization of the local system. The units described are the county, the second-class township, the first-class township, the borough, and the third-class city; covering all the rural and minor urban local governments except those administering schools and welfare. The Survey staff members who prepared the divisions of the report referred to are, respectively: H. F. Alderfer, Pennsylvania State College; Edward W. Carter, University of Pennsylvania; Philip B. Willauer, Ursinus College; Bradford W. West, University of Pennsylvania; Blake E. Nicholson, University of Pennsylvania. $4.00. (Apply to the American Philosophical Society, 104 S. Fifth St., Philadelphia, Pa.)

Publications of State Leagues of Municipalities

The American Municipal Association has compiled a revised list of the publications of state leagues of municipalities as of May 1, 1935. Report No. 108 of the Association. It does not duplicate in entirety the index to the reports of the New York State Conference of Mayors and Other Municipal Officials, published annually by the Conference, but it does include all the research publications, model ordinances, miscellaneous reports, and proceedings of the Conference. To facilitate the procurement of any of the publications listed, the addresses of the executive secretaries of all the Leagues are included; also a list of all the journals of the Leagues. 59 mimeographed pp. 75c. (Apply to Paul V. Betters, Executive Director, American Municipal Association, Drexel Ave. and 58th St., Chicago, Ill.)

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Transportation

"Public Passenger Carriers in New Hampshire Part I. Railroads, Electric Railways, Motor Busses, Taxicabs, Contract Carriers" is a report by the Advisory Committee on Transportation to the State Planning and Development Commission. Concord, N. H. March, 1935. The Committee has given a historical outline of railroad development in New Hampshire; an analysis of present railroad facilities and the problems of decreased revenues, of competition with the private automobile, the electric railway, the motor bus, unregulated contract carriers, and taxicabs, with many important factors of difficulty; the essentials of a coordinated transportation system; and recommendations concerning public regulation. Many maps, charts and tables. 38 mimeographed sheets. (Apply to the State Planning and Development Commission, Concord, N. H.)

Traffic

The Better Traffic Committee of Pittsburgh has published a "School Safety Handbook" setting forth the means by which traffic safety is sponsored and emphasized in the schools of that city. School Boy Patrols, Junior Safety Councils, Traffic Code provisions, essay contests, teaching aids, high school motor clubs, accident analyses, traffic protective equipment, lectures by traffic officers, and moving pictures, are the means employed in this work. The local safety organizations include, besides the Committee, the Bureau of Traffic Planning, the Western Pennsylvania Safety Council, the Automobile Club of Pittsburgh, and the Pittsburgh Motor Club. The supplement to this pamphlet presents the prize-winning essays from the Eighth Annual Traffic Essay Contest, October, 1934. 20 pp. Illustrated. (Apply to the Better Traffic Committee, 908 City-County Bldg., Pittsburgh, Pa.)

Propaganda

The May, 1935, issue of *The Annals* of The American Academy of Political and Social Science contains a suggestive discussion of "Pressure Groups and Propaganda." Twenty-eight articles are included, presented under the following divisions: The Background of Group Pressures in the United States; The Technique of Exerting Group Pressure; Pressure Groups, Propaganda, and New Deals; The Place of Propaganda in Modern Life. The importance of this subject rests upon the modern facility of communication for mass impression; world-wide social unrest; the use by states of means of propaganda; and the effect of opinion leadership on democratic ideals. The discussion leads to the vital question: With these pressure resources, how may effective propaganda be of the greatest social value in the world today? 287 pp. in the issue. 50c. (Apply to The American Academy of Political and Social Science, 3457 Walnut St., Philadelphia, Pa.)

Population Growth

"Calculation and Use of the Population Curve," by Alexander Hegstroem, civil engineer, is a computation that was part of a FERA project—town plan, survey and mapping—of the Bureau of Engineering, Stratford, Conn., in 1934. In order to include the prediction of future population, thorough research was necessary. The results were mimeographed in a pamphlet of 37 pages. This explains and develops the formulas, shows practical application and examples, gives several tables, and shows the results of unusual conditions, such as the war-time boom due to the ammunition factories across the line in Bridgeport. $1.00. (Apply to W. B. Dunbar, Town Engineer, Stratford, Conn.)

Accounting

The preliminary edition of "Municipal Funds and Their Balance Sheets" was published June, 1935, by the National Committee on Municipal Accounting as the Committee's Bulletin No. 5, a pamphlet of 76 pages. It describes the various classes of municipal funds and exhibits model balance sheets for each. "Since the use of funds and fund accounts distinguishes municipal from industrial and commercial accounting, the present material is fundamental to an understanding of municipal accounting." $1.00. (Apply to the Committee, 850 E. 58th St., Chicago, Ill.)

Social Welfare

Regulation of the Small Loan Business.—By Louis N. Robinson, formerly Professor of Economics, Swarthmore College; and Rolf Nugent, Director, Department of Remedial Loans, Russell Sage Foundation. Published by Russell Sage Foundation, New York, 1935. 284 *pp.* $3.00.

This is the final volume of the Small Loan Series, and summarizes the previous publications in the series: The Regulation of Pawnbroking; Ten Thousand Small Loans; Small Loan Legislation; and Moneylending in Great Britain; also two earlier studies, The Salary Loan Business in New York City, and The Chattel Loan Business. The present volume, however, gives much additional information, covering historical events and legislative changes to December 1, 1934, and data concerning expenses and profits for the year 1933; most other material given is for the year 1932.

County Government

Legal authorization for county home rule in Texas has been provided by constitutional amendment and enabling act, and, by population limit, is restricted to thirteen counties. The movement has not proved effectual, however, and this study, "The County Home Rule Movement in Texas," by Roscoe C. Martin, of The University of Texas, reprinted from *The Southwestern Social Science Quarterly* for March, 1935, seeks to discover why county home rule has not been adopted in these counties. It is stated that the amendment and the statute are long, wordy, detailed and repetitive, also "more than a little obscure"; that certain plausible arguments, to some extent logical, may be urged against the provisions; and that many factors operate against the acceptance of any proposal which departs from the beaten path. "What is unquestionably the chief obstacle to the achievement of noteworthy change," and "the most distressing fact brought to light by the county home rule movement in Texas," is "the familiar popular lethargy." "The instruments with which to forge a reasonably adequate system of county government lie ready to hand whenever the people of this state may choose to seize and hold them." 11 pp. (Apply to The University of Texas, Austin, Texas.)

Housing

"A Preliminary Study of Low-Rental-Housing Maintenance Problems as Affected by the Work of the Architect" was issued by the Housing Study Guild (101 Park Ave., New York) on May 1, 1935. The Guild committee responsible for the report consisted of Milton Lowenthal and Henry M. Barone, who were assisted by Abraham Goldfeld, Executive Director, Fred L. Lavenburg Foundation. The Foreword, by Henry S. Churchill, explains the need of a wider knowledge of comparative data on housing maintenance—the cost of upkeep and repairs, qualities of materials and structural methods, costs of fuel, light and other services—and the scarcity of accurate information. Four housing developments were visited—The Lavenburg Homes, the Amalgamated Housing Corporation, the Brooklyn Garden Apartments, and the Phipps Garden Apartments—and seven others in various cities were studied from answers to questionnaires and by correspondence. 40 mimeographed sheets. (Apply to the Guild.)

"Planning American Standards for Low-Rent Housing" is a study prepared by Alfred Fellheimer, A.I.A., Consultant, Housing Division, Public Works Administration, to aid architects in finding solutions to local phases of the national housing problem. The standards presented are the result of an intensive research into the social, economical and technical factors of this problem, from the standpoints of tenant and builder. The planning standards are applied both to site planning and to unit layouts, and they have been set as the most practical for the rank and file of American families. They are the bases from which individual projects may be planned, and their wide variety has been developed so that a desirable minimum standard of living may be economically maintained in housing developments, whatever their extent or location. 20 quarto pp. Reprinted from the February, 1935, *American Architect*, in which the Housing Division standards were first comprehensively presented. (Apply to Housing Division, Public Works Administration, Washington, D. C.)

Home Rule

Home Rule for Metropolitan Chicago, Ill.—By Albert Lepawsky, Research Associate, The University of Chicago. The University of Chicago Press, Chicago, Ill. 1935. *XXIII* + 210 *pp.* $2.00 *from* THE AMERICAN CITY.

While this is a specific study of the Chicago metropolitan governmental area, it is in general applicable to most of the country's 96 metropolitan areas. It also takes into consideration the new relationships between the city and the Federal Government, which have a bearing on metropolitan self-government and regional home rule. Six alternative solutions of the problem of Chicago's "legal infancy" are given in Chapter X, including modifications of the constitutional home rule plan to prevent the narrowing effects of judicial review of municipal powers.

Child Welfare

The Children's Bureau of the U. S. Department of Labor has issued Part I of a report on "Institutional Treatment of Delinquent Boys," this covering "Treatment Programs of Five State Institutions." This is Bureau Publication No. 128, and has been prepared by Alida C. Bowler and Ruth S. Bloodgood. The institutions selected are representative of treatment programs being administered in various sections of the country. The material is well organized, clear and interesting in presentation. Part 2 of the report will contain analyses of 751 cases of delinquent boys who had been under care in these five institutions and had been released at least five years prior to the time of the study. 329 pp. 25c. (Apply to Superintendent of Documents, Washington, D. C.)

"Children Engaged in Newspaper and Magazine Selling and Delivering" is the title of Bureau Publication No. 227 of the Children's Bureau, U. S. Department of Labor. In seventeen representative cities in different parts of the country rapid field surveys were made of this work on the part of children under 16 years of age. The study was undertaken by the Industrial Division of the Children's Bureau, in cooperation with the National Recovery Administration, for the purpose of supplying the Government members of the Daily Newspaper and Graphic Arts Code Authorities with the information requested by the President when he signed the codes for these industry. Coperation was received from superintendents, principals and other members of school staffs, from state and local officials charged with enforcement of street-trades regulations, and from officials of social agencies; also from newspaper and magazine circulation managers regarding their employment policies. 65 pp. Detailed, interesting, authoritative. 10c. (Apply to Superintendent of Documents, Washington, D. C.)

Other Reports and Pamphlets Received

ALLIANCE, NEBR.—Annual Report, 1934. 40 pp.

CONCORD, N. H.—Annual Report, Board of Water Commissioners. 1934. 18 pp.

EASTON, PA.—Annual Report, 1934. 93 pp.

MOOSE JAW, SASK.—Financial Statement, 1934. 52 pp.

OAK PARK, ILL.—Annual Report, Department of Public Works, 1934. 91 mimeographed pp.

OAK PARK, ILL.—Annual Report, Water Department, 1934. 23 mimeographed pp.

PHILADELPHIA, PA.—Annual Report, Art Jury, 1934. 44 pp.

ST. PAUL, MINN.—Annual Report, Civil Service Bureau, 1934. 28 pp.

"A Housing Program for the United States" by Nathan Straus (66 W. 23d St., New York). An address delivered April 11, 1935, before School of Architecture, Princeton University. 19 pp.

"Shelter Care and the Local Homeless Man," by Alvin Roseman, of the American Public Welfare Association. Publication No. 46 of the Public Administration Service, 850 E. 58th St., Chicago, Ill. 56 pp. 50c.

"A Community-Planning Primer for Illinois," by Karl B. Lohmann. Published by Bureau of Community Planning, College of Fine and Applied Arts, University of Illinois, Urbana, Ill. August 13, 1935. 24 pp.

"Policies and Procedures in Public Health." Proceedings of 1935 Annual Conference, Advisory Council, Milbank Memorial Fund, New York. 115 pp.

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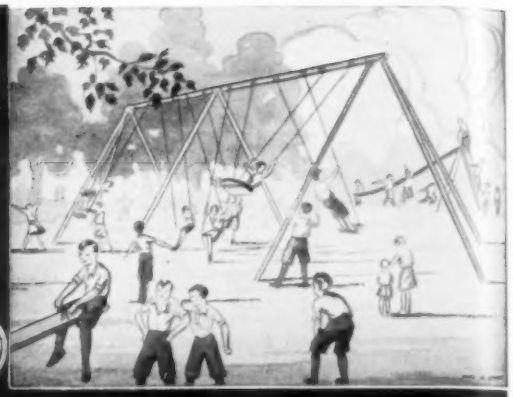

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When Swings, Slides, Giant Strides, See-Saws and all the other equipment available for modern play-yards, claim your attention—consider MEDART PLAYGROUND APPARATUS—especially if safety, service and durability concern you most. . . . Sixty-two years of manufacturing experience is reflected in every piece of MEDART *Tested* APPARATUS. . . . Let us help you plan your playground.

Consult with "MEDART" when considering Gymnasium Apparatus, Basketball Backstops, Steel Lockers, Wardrobes, Cabinets or Shelving.

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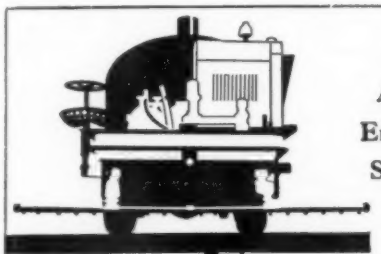
Sales Engineers in all Principal Cities—Consult your Telephone Directory.



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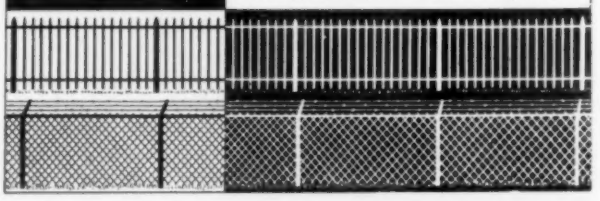

CONVENTIONS—WHEN AND WHERE

(Figures in parentheses following the name of the convention city indicate the estimated attendance other than local)

AUGUST 4-11.—EVANSTON, ILL.
National Institute for Commercial and Trade Organization Executives. Annual session. (Northwestern University.) Secretary, John N. Van der Vries, 607 First National Bank Building, Chicago, Ill.

AUGUST 20-22.—SIOUX CITY, IOWA. (300)
League of Iowa Municipalities. Annual convention. Secretary-Treasurer, Frank G. Pierce, Marshalltown, Pa.

AUGUST 21-23.—AMHERST, N. S. (250)
Union of Nova Scotia Municipalities. Annual convention. Secretary, Hon. Arthur Roberts, Bridgewater, N. S.

AUGUST 22-23.—PITTSBURGH, PA.
American Water Works Association—Central States Section. Annual meeting. Secretary, H. K. Nelson, 2435 Koppers Building, Pittsburgh, Pa.

AUGUST 22-23.—WILLIAMSPORT, PA. (250)
League of Cities of the Third Class in Pennsylvania. Annual convention. Secretary, Herman A. Early, City Hall, Harrisburg, Pa.

AUGUST 26-31.—HAMILTON, N. Y.
Governmental Research Association. Annual conference. (Colgate University.) Secretary-Treasurer, Robert M. Paige, 850 East 58th Street, Chicago, Ill.

AUGUST 26-SEPTEMBER 9.—TORONTO, ONT.
Ontario Municipal Association. Annual meeting. Secretary-Treasurer, H. L. Brittain, 137 Wellington Street W., Toronto, Ont.

AUGUST 27-29.—UTICA, N. Y. (225)
New York State Association of Chiefs of Police. Annual convention. Secretary-Treasurer, James L. Hyatt, 503 Western Avenue, Albany, N. Y.

AUGUST 28-30.—PHILADELPHIA, PA.
National Shade Tree Conference. Annual convention. Secretary-Treasurer, Dr. R. P. White, New Jersey Agricultural Experiment Station, New Brunswick, N. J.

SEPTEMBER 3.—NORTH BAY, ONT.
Union of Canadian Municipalities. Annual convention. Secretary, Samuel Baker, City Clerk, London, Ont.

SEPTEMBER 3-6.—CINCINNATI, OHIO.
Illuminating Engineering Society. Annual convention. (Netherland Plaza Hotel.) General Secretary, D. W. Atwater, 29 West 39th Street, New York.

SEPTEMBER 11-13.—ANN ARBOR, MICH. (350)
Michigan Municipal League. Annual meeting. Director, Harold D. Smith, University of Michigan, Ann Harbor, Mich.

SEPTEMBER 12-14.—LAKE PLACID, N. Y.
American Forestry Association. Annual meeting. Executive Secretary, Ovid Butler, 1727 K Street N. W., Washington, D. C.

SEPTEMEER 15-18.—PORTLAND, ORE. (250)
American Institute of Park Executives and the American Park Society. Annual convention. Executive Secretary, William H. Walker, 2234 Inglewood Place, South Bend, Ind.

SEPTEMBER 16-18.—DENVER, COLO.
American Water Works Association—Rocky Mountain Section. Annual meeting. (Brown Place Hotel.) Secretary-Treasurer, B. V. Howe, 437 State Office Building, Denver, Colo.

SEPTEMBER 17-20.—PROVIDENCE, R. I. (550)
New England Water Works Association. Annual convention. (Providence-Biltmore Hotel.) Secretary, Frank J. Gifford, 715 Tremont Temple, Boston, Mass.

SEPTEMBER 18-19.—HARLAN, KY. (200)
The Kentucky Municipal League. Annual convention. Executive Secretary, Carl B. Wachs, Municipal Building, Lexington, Ky.

SEPTEMBER 19-21.—QUINCY, ILL. (500)
Illinois Municipal League. Annual convention. Secretary, A. D. McLarty, 500 East Capitol Avenue, Springfield, Ill.

SEPTEMBER 19-20.—KENOSHA, WIS. (600)
League of Wisconsin Municipalities. Annual convention. Secretary, Frederick MacMillin, 114 North Carroll Street, Madison, Wis.

SEPTEMBER 20-21.—GRAND FORKS, N. DAK.
League of North Dakota Municipalities. Annual convention. Executive Secretary, Myron H. Atkinson, Bismarck, N. Dak.

SEPTEMBER 23, WEEK OF.—ATLANTIC CITY, N. J.
American Transit Association and Affiliated Organizations. Annual convention. General Secretary, Guy C. Hecker, 292 Madison Avenue, New York.

SEPTEMBER 23-26.—SAN FRANCISCO, CALIF.
League of California Municipalities. Annual convention. (Hotel Whitcomb.) Secretary, Richard Graves, 223 City Hall, San Francisco, Calif.

SEPTEMBER 23-24.—PALO ALTO, CALIF.
California Sewage Works Association. Annual convention. Secretary, Fred D. Bowlus, 202 Law Building, Los Angeles, Calif.

SEPTEMBER 24-27.—KNOXVILLE, TENN. (700)
International Association of Fire Chiefs. Annual convention. Secretary, James J. Mulcahey, Yonkers, N. Y.

SEPTEMBER 30-OCTOBER 4.—CHICAGO, ILL.
National Recreation Association. Annual congress. (Sherman Hotel.) Secretary, Recreation Congress Committee, Thomas E. Rivers, 315 Fourth Avenue, New York.

OCTOBER 2-3.—MONCTON, N. B.
Union of New Brunswick Municipalities. Annual convention. Honorary Secretary-Treasurer, John B. McNair, Fredericton, N. B.

OCTOBER 2-3.—CLEVELAND, OHIO.
Ohio Conference on Sewage Treatment. Annual convention. (Statler Hotel.) Secretary-Treasurer, W. B. Lockhart, Sewage Treatment Plant, Fostoria, Ohio.

OCTOBER 4-5.—SCHENECTADY, N. Y.
Joint meeting. New England Sewage Works Association. Secretary, F. W. Gilcreas, State Department of Health, Albany, N. Y. *New York State Sewage Works Association.* Secretary, A. S. Bedell, State Department of Health, Albany, N. Y.

OCTOBER 4-5.—GRAND FORKS, N. DAK.
North Dakota Water and Sewage Works Conference. Annual convention. Secretary-Treasurer, M. D. Hollis, Bureau of Sanitary Engineering, Bismarck, N. Dak.

OCTOBER 5-7.—MILWAUKEE, WIS.
Conference of State Sanitary Engineers. Annual meeting. Secretary-Treasurer, R. E. Tarbett, U. S. Public Health Service, Washington, D. C.

OCTOBER 7-10.—MILWAUKEE, WIS.
American Public Health Association. Annual meeting. Executive Secretary, Dr. Reginald M. Atwater, 50 West 50th Street, New York.

OCTOBER 7-8.—GREENSBORO, N. C.
North Carolina League of Municipalities. Annual convention. Secretary, Patrick Healy, Jr., Capital Club Building, Raleigh, N. C.

OCTOBER 9-11.—COLUMBUS, NEBR.
League of Nebraska Municipalities. Annual meeting. Secretary-Treasurer, C. E. Beals, 204 Brownell Building, Lincoln, Nebr.

OCTOBER 9-10.—LACROSSE, WIS.
Wisconsin Chiefs of Police Association. Annual meeting. Secretary, R. H. McCarty, Kaukauna, Wis.

OCTOBER 14-16.—CINCINNATI, OHIO.
American Society of Municipal Engineers. International Association of Public Works Officials. Joint conference. (Netherlands Plaza Hotel.) Executive Director, Donald M. Stone, 850 East 58th Street, Chicago, Ill.

OCTOBER 14-17.—HOUSTON, TEXAS.
American Water Works Association—Southwest Section. Annual convention. Secretary-Treasurer, Lewis A. Quigley, Fort Worth, Texas.

OCTOBER 14-16.—RICHMOND, VA. (200)
International Association of Municipal Electricians. Annual convention. Secretary, W. H. Harth, Columbia, S. C.

OCTOBER 14-18.—LOUISVILLE, KY.
National Safety Council. Annual Safety Congress and Exposition. Managing Director, W. H. Cameron, 20 North Wacker Drive, Chicago, Ill.

OCTOBER 15-16.—LOUISVILLE, KY.
Institute of Traffic Engineers. Annual meeting. Secretary-Treasurer, Hawley S. Simpson, 115 Fifth Avenue, New York.

OCTOBER 15-18.—SAN ANTONIO, TEXAS. (250)
National Association of Public School Business Officials. Annual convention. Secretary, H. W. Cramblet, Board of Education, Pittsburgh, Pa.

OCTOBER 16-19.—CHICAGO, ILL.
American County Association. Convention. Executive Director, Alex. B. LaZoris, Hotel LaSalle, Chicago, Ill.

OCTOBER 16-18.—ATLANTIC CITY, N. J.
Pennsylvania Water Works Association. Annual meeting. (Haddon Hall.) Secretary, Dr. F. Herbert Snow, 327 Telegraph Building, Harrisburg, Pa.

OCTOBER 17-18.—ROCHESTER, N. Y.
New York State Sewage Works Association. Fall meeting. (Powers Hotel.) Secretary-Treasurer, A. S. Bedell, Albany, N. Y.

OCTOBER 18-19.—ST. PAUL, MINN.
American Water Works Association—Minnesota Section. Annual meeting. Secretary-Treasurer, Ronald M. Finch, Wallace & Tiernan Co., Inc., Minneapolis, Minn.

OCTOBER 20-23.—WASHINGTON, D. C.
National Association of Commercial Organization Secretaries. Annual convention. Secretary-Treasurer, R. H. Goddard, Worcester, Mass.

OCTOBER 21-23.—KNOXVILLE, TENN.
American Municipal Association. Annual meeting. Executive Secretary, Paul V. Betters, 850 East 58th Street, Chicago, Ill.

OCTOBER 21-23.—KNOXVILLE, TENN. (200)
International City Managers' Association. Annual convention. Executive Director, Clarence E. Ridley, 850 East 58th Street, Chicago, Ill.

OCTOBER 21-23.—KNOXVILLE, TENN.
Municipal Finance Officers' Association of the United States and Canada. Annual convention. Executive Director, Carl H. Chatters, 850 East 58th Street, Chicago, Ill.

OCTOBER 21-23.—KNOXVILLE, TENN.
National Association of Tax Assessing Officers. Annual convention. Secretary-Treasurer, Miss Matylda A. Zurowska, City Assessor, Scranton, Pa.

OCTOBER 23-26.—SAN DIEGO, CALIF.
American Water Works Association—California Section. Annual convention. Secretary-Treasurer, J. E. Phillips, 207 South Broadway, Los Angeles, Calif.

OCTOBER 25-26.—URBANA-CHAMPAIGN, ILL.
Central States Sewage Works Association. Annual meeting. (Urbana Lincoln Hotel.) Secretary-Treasurer, G. H. Radebaugh, Urbana-Champaign, Ill.

NOVEMBER 4-6.—DURHAM, N. C.
Joint meeting. American Water Works Association—North Carolina Section. North Carolina Sewage Works Association. Secretary, M. F. Trice, State Board of Health, Raleigh, N. C.

NOVEMBER 6-8.—DES MOINES, IOWA.
American Water Works Association—Missouri Valley Section. Annual meeting. Secretary, Earl L. Waterman, University of Iowa, Iowa City, Iowa.

NOVEMBER 7-8.—ROANOKE, VA.
American Water Works Association—Virginia Section. Annual conference. (Hotel Roanoke.) Secretary, H. W. Snidow, 601 State Office Building, Richmond, Va.

NOVEMBER 9-10.—COLUMBUS, OHIO.
Ohio State Planning Conference. Annual meeting. Secretary-Treasurer, Kyle W. Armstrong, 2-5 Wyandotte Building, Columbus, Ohio.

NOVEMBER 25-26.—PROVIDENCE, R. I.
National Municipal League. Annual Conference on Government. Secretary, Howard P. Jones, 309 East 34th Street, New York.

DECEMBER 9-12.—MIAMI, FLA. (400)
American Association of State Highway Officials. Annual convention. Executive Secretary, W. C. Markham, 1222 National Press Building, Washington, D. C.

JUNE 29-JULY 3, 1936.—LOS ANGELES, CALIF.
American Water Works Association. Annual convention. (Hotel Biltmore.) Secretary, Beekman C. Little, 29 West 39th Street, New York.

MUD-JACK METHOD

Pedestrian Hazard
• • •
3 inch Sunken Walk Slab

Hazard Eliminated
• • •
Slab Raised to Grade

Corrects Sunken Sidewalk Slab

One of many applications of the Mud-Jack method is the raising of sidewalk slab—the No. 10 N. E. C. MUD-JACK corrected the 3-inch settlement illustrated, in less than TEN MINUTES. Compare this with slab replacement costs. Depressed curb, gutter and street slab is quickly and efficiently raised to the correct grade by this modern economical method.

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KOEHRING COMPANY

Milwaukee Wisconsin

For Raising Concrete Curb, Gutter, Walks, Street

A HIGHWAY SIGN

for every MUNICIPAL, CITY or COUNTY NEED

Quality Signs at *Lowest Prices*

- Cast Aluminum Embossed Signs
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- Cast Aluminum Street Markers
- Reflecting Button Danger Signals
- "Twin Pin" Traffic Markers
- Reflecting Button Signs — Custom Built
- Zone Paint
- Steel Brackets Steel Posts

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The Warren Sign Company, Geneva, Ohio

Cut Mowing Costs . . . *with a* DETROIT MOTOR SCYTHE

- Here is the most economical and easily handled cutter on the market.
- It goes anywhere, cuts anything, and enables one man to do the work of four or more with hand scythes.
- It has a 36-inch sickle driven by a powerful one-cylinder gasoline motor and is mounted on a free running 30-inch wheel, allowing it to be backed up, pivoted sharply, or tilted up or down slopes similar to a wheelbarrow.
- It is now being produced by a recognized leader among mower manufacturers and during over four years of service, thousands of users have testified to its economy and dependability.

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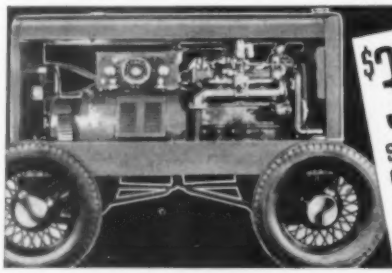

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Let this New 40-Volt, heavy-duty, money-saving Arc Welder solve your maintenance problems. It costs less to operate, can be taken right to the job.

Eliminates the need for new parts and costly shutdowns of equipment. Can be used for fabricated construction work and pipe welding as well as for maintenance.

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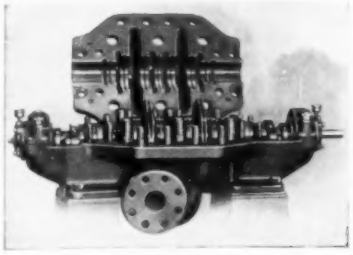
on any kind of municipal equipment or supplies? See pages 19, 20 and 22 for a list of valuable booklets to be had for the asking.

NEWS AND ILLUSTRATIONS

Items of Interest to City, Town and County Officials, and Others Concerned with the Economical Construction and Efficient Operation of Public Improvement Undertakings



NEW TYPE MM MULTI-STAGE PUMP

High-Head Centrifugal Pump

The new Type MM multi-stage centrifugal pump developed by Allis-Chalmers Manufacturing Co., Milwaukee, Wis., for heads from 400 to 1,600 feet and capacities up to 400 gallons per minute, is designed along the general lines of the well-known Allis-Chalmers Type M pump. These new pumps are horizontal-shaft, split-casing, double-suction, and bronze-fitted. The use of double-suction runners equalizes the end thrust and eliminates the use of internal balancing arrangements. Each stage of the casing has a spiral volute, and between stages the liquid flows from one volute into an exceptionally long diffusion nozzle and then into a long-sweep return bend to the inlet passages of the following stage. This construction results in the maximum practical regain of pressure between stages as the liquid is directed along smooth flow lines without sudden changes in velocity. The pressure on the stuffing-boxes is kept to approximately the suction pressure.

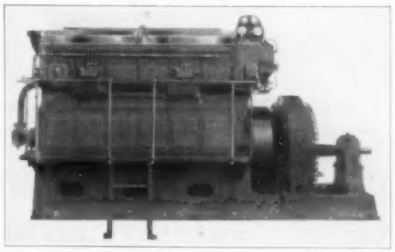
The Type MM pumps are particularly adapted for boiler feed and high-head municipal water pumping service.

Objectives in Diesel Engine Design

There have been three main objectives in the design of Cooper-Bessemer diesel engines during the past year: the first, the design of engines that, in all their details, would be specifically diesels and not borrow anything from the design of steam, gas or gasoline prime movers; second, the use of materials specially suited to the conditions of diesel operation; third, the improvement of the fuel-injection system so as to overcome all the disadvantages of the common-rail system and yet retain its advantages.

The new N line of Cooper-Bessemer diesels made by Cooper-Bessemer Corporation, Mount Vernon, Ohio, contains four new engineering developments. Steel thru-bolts connect the cylinder heads to the bases, putting the cylinder block and centerframe in compression. Cylinder liners are suspended from the cylinder heads instead of being pinched between the heads and the cylinder block. The patented wrist-pin construction practically doubles the effective wrist-pin bearing areas. On all these engines, except the smallest, a patented atmospheric-relief injection system is used.

The largest N line diesel is the Type GN, with power cylinders 10½ inches diameter, 13½ inches stroke, and is rated 50 to 75 horsepower per cylinder. The intermediate size, Type EN, has power cylinders with 8-inch bore, 10½-inch stroke, and is rated from 20 to 47 horsepower per cylinder. The smallest size, which is the Type BN, has power cylinders 5½ inches in diameter, 7¾-inch stroke, and is rated from 10 to 22½ horsepower per cylinder. Horsepower ratings of all three sizes depend on the speed and service.



THE LARGEST OF THE NEW COOPER-BESSEMER DIESELS, TYPE GN, MADE IN 3, 4, 6 AND 8 CYLINDERS

Automatic Sewage Samplers

To control the operation of a sewage treatment plant satisfactorily, regular samples must be taken at different parts of the plant. The Chicago Pump Co., 2336 Wolfram Street, Chicago, Ill., has developed the Tru-Test sewage sampler, which takes samples in proportion to the flow.

There are three methods of control of this sampler: (1) by utilizing the difference in pressure through a flow meter; (2) by the variation in the level of the liquid in the tank or channel; and (3) by manually setting the sampler to take samples at any desired frequency. The Tru-Test sampler is made in two types: the stationary type, which remains at a definite location at all times; and the portable type, which can be used to take samples for any length of time desired at one point and then moved to another. The latter type is particularly adapted to experimental work.

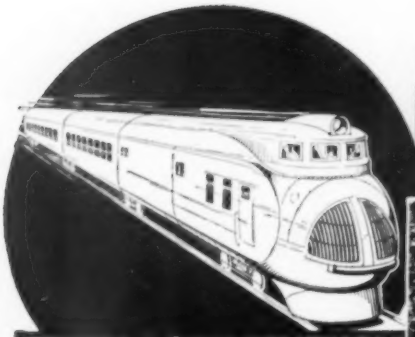
The stationary sampler is 15 inches square at the base and 32 inches high. It weighs 193 pounds. The bottle containing the samples sets on an arched base, and a pure gum rubber hose extends from the funnel under the sampling spoon into the bottle. The sampler itself is of cast iron with V-shaped inlet and outlet passageways cast into the housing. The motor is on a platform cast in the housing above the waterline. The motor and spoon are the same in both types of Tru-Test samplers.

The spoon is of such shape that as it revolves it takes a sample of the mixture and deposits that sample in a funnel above the bottle. The standard spoon has a capacity of 20 cc, which when timed to take one sample every 10 minutes will accumulate about 80 per cent of a gallon of composite sample in 24 hours. Spoons with capacities of 10 cc and up to 50 cc can be furnished. The sampling spoon is mounted on the end of the motor shaft and is free to rotate almost a complete revolution. A pin on the shaft engages another pin on the spoon and causes the spoon to rotate. As the spoon enters the liquid, a counterweight causes it to move quickly through the liquid, rise out of it with a sample, and discharge the sample into a funnel, where it flows by gravity into the collection bottle.

Weston E. Fuller Dies

WESTON E. FULLER, a member of the firm of Fuller and Everett, consulting engineers, 22 E. 40th St., New York, died on June 22.

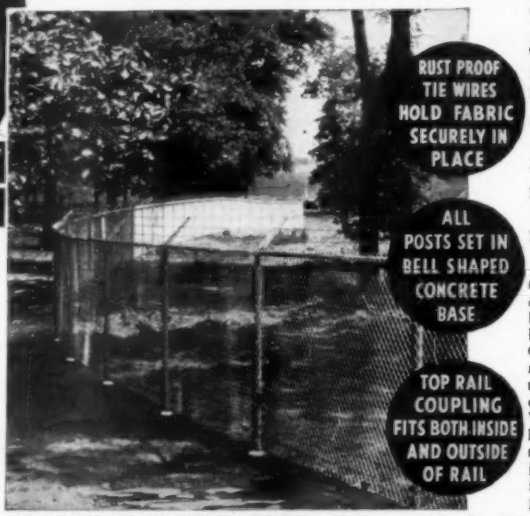
THE TRU-TEST SEWAGE SAMPLER



As Modern As The STREAM LINE TRAIN

TRULY A 20TH CENTURY PRODUCT

HERE'S one fence that incorporates all the newest ideas in modern fence construction. Made of Copper-bearing steel that is "Hot-dip" galvanized after complete fabrication, this fence presents a neat, trim and sturdy appearance. When you sight along a line of Continental fence you will find every post in perfect alignment; corners substantially braced, fabric that is stretched to just the proper tension and securely tied to the framework; gates that swing easily and maintain their original alignment, and above all a fence that is strong and durable yet modern in its appearance.


RUST PROOF TIE WIRES HOLD FABRIC SECURELY IN PLACE
ALL POSTS SET IN BELL SHAPED CONCRETE BASE
TOP RAIL COUPLING FITS BOTH INSIDE AND OUTSIDE OF RAIL

THESE CONSTRUCTION ADVANTAGES INSURE LONGER FENCE LIFE

Heavier and stronger H-section line posts.
Barb wire attached to post arms in angle slot, being automatically locked in position.
New exclusive top rail coupling 7" long fits inside as well as outside.
New tension locking pin eliminates all bolts and nuts in holding fabric to terminal posts.
Improved pivot type hinges insure perfect operation of gates without any maintenance.

Offered in three popular styles without barb wire, with three strands of barb wire, or with five strands of barb wire at the top, Continental Chain-Link fence will fit any requirement. We offer a complete service that includes the co-operation of our experienced staff of fence engineers. We shall be glad to assist you in selecting the style of fence best suited to your particular needs, and every job must prove to your entire satisfaction before it is considered complete.

CONTINENTAL STEEL CORP., Kokomo, Ind., *Distributors in all Principal Cities*

Continental Steel Corporation
Kokomo, Indiana, Dept. J-8
Gentlemen: Send your catalog on Continental Fence.
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Firm .....
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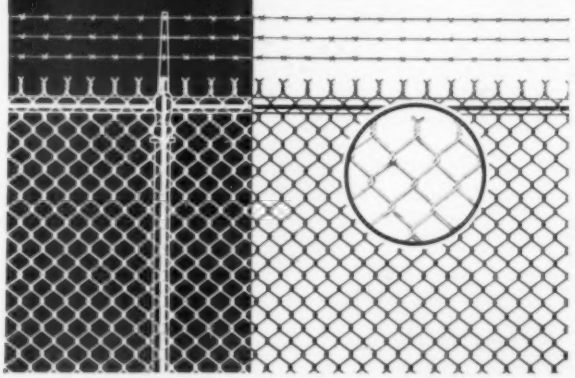
*CONTINENTAL Chain-Link FENCE

A COMPLETE ESTIMATE IS YOURS FOR THE ASKING

ACCIDENTS *are just incidents to sturdy* Pittsburgh Chain-Link Fence ★

Pittsburgh Chain-Link Fence is made to resist not only the ravages of time and the elements, but also the inevitable accidents of everyday use. Designed for resilience, Pittsburgh chain-link fabric *absorbs* shocks, and after ordinary impacts, returns to its original shape. Erected on a strong frame of heavily zinc-coated steel, it will give many years of highly satisfactory service. Write today for estimate of cost of fencing your property.

PITTSBURGH STEEL CO.
720 Union Trust Building, Pittsburgh, Pa.



EVERWEAR OFFERS THE SAFEST MERRY-WAVE-STRIDE

Fully covered by patents which include the many exclusive safety features, this Merry-Wave-Stride insures complete safety to the children in your parks and recreation grounds. EverWear Merry-Wave-Stride gives more action and exercise.

You owe it to your children to install the safest equipment—EverWear's Patented Stride. Ask for complete details.

USE SPRING RUBBER SAFETY SEATS FOR YOUR SWINGS

An ingenious arrangement of rubber and steel, patented by EverWear, which eliminates all the hazards of former type swing seats.

This EverWear seat is soft, springy, resilient, has remarkable safety features, strength and durability. Priced low enough to meet your budgets. Write for details. Ask for complete new catalog.

THE EVERWEAR MFG. CO.
SPRINGFIELD, OHIO, U. S. A.

GET THE RUNNERS

POISON IVY is eradicated only when you kill the runners. Dolge Weed-Killer, applied according to guaranteed method, positively does kill the runners, as well as stems and leaves. Super-strength chemical also kills crab grass, burdock, chickweed and other deep-rooted growth. Write for details.

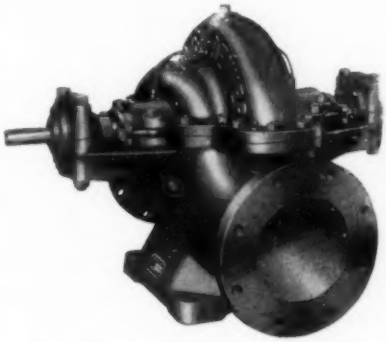
Send for Free Ground Maintenance Manual

THE C. B. DOLGE COMPANY . . . . . .
MAIN OFFICE AND LABORATORIES **WESTPORT, CONNECTICUT**

New Line of Double-Suction Centrifugal Pumps

A new line of double-suction, single-stage, split-case centrifugal pumps which, the makers state, combine a number of unusual features, has just been announced by the Gardner-Denver Co., Quincy, Ill. These pumps are adaptable to practically any class of service and are particularly recommended for general water supply in municipalities. The pump is designed for any type of drive, including flat-belt, V-belt, direct-connected gas or diesel engine, although the usual drive is directly connected to an electric motor.

All these pumps are identical in construction, the only difference being in dimensions. This series of pumps covers all heads up to approximately 300 feet. Considerable attention has been given to making the pump easy to maintain. The shaft sleeve nut, for example, is located outside the pump and next to the pump housing, a convenience in tightening sleeves. This nut is also used as a jack to remove the ball bearing; no puller is required.



A TYPICAL UNIT OF THE NEW GARDNER-DENVER CENTRIFUGALS

The bronze impellers of the new pumps are of the double-suction enclosed type, and hydraulically balanced. The casing itself is of cast iron design, producing smooth flow and gradual velocity changes. The casing is split on the horizontal center line to permit access to the pump interior without disturbing the suction or discharge pipes.

The shaft is made of heat-treated high-carbon alloy steel accurately ground and polished. The shaft sleeves are cast bronze, machined to a very smooth surface, and are held firmly in place by an extension of the impeller key and also by the nut outside the packing box, this nut also being used to locate the impeller centrally in the casing.

New Traction Device for Dual-Tired Trucks

A new tool to make it easier to operate dual-tired pneumatic trucks of either two-, four- or six-wheel drive through muddy or soft terrain has been announced by the By-Products Steel Corporation, Coatesville, Pa. This Hipkins Tractioneer consists of a series of U-

MODEL HSD "TRIPLE COMBINATION," PUMP, BOOSTER TANK AND LADDER TRUCK, BUILT BY HAHN MOTORS, INC., HAMBURG, PA., EQUIPPED WITH THE HIPKINS TRACTIONEER, FIGHTING A BRUSH FIRE

shaped pressed steel shoes with V-shaped brackets on the backs of the shoes that fit into the groove between the two tires of the wheel. Through the brackets a connecting chain of the length required by the wheel circumference is passed, so that the entire assembly is flexible and can adjust itself to variations in contour of the ground.

Power is transmitted from the tire treads through the steel shoes, so that there is no torque strain on the parts connecting the steel shoes. As the wheels revolve, the Tractioneer creeps around them, thus preventing undue wear on any part of the tires or the Tractioneer itself. The device is so constructed, however, that the wheels do not spin. Installation of this device is a one-man job and requires about ten minutes, and it can be removed in five minutes. If the vehicle is stuck in mud, it is possible to apply the Tractioneer without jacking-up the wheels. The Tractioneer has been tested extensively at the Aberdeen Proving Grounds of the Ordnance Department, U. S. A., in Maryland with a 1½-ton vehicle loaded to capacity and run over a mud course, first without chains or Tractioneer, second with chains on the rear wheels, and last with the Tractioneer on the rear wheels. Without chains or the Tractioneer, the slip was 25.7 per cent. With chains on the rear wheels, the slip was reduced to 22.6 per cent. With the Tractioneer on the rear wheels, the slip was only 5.3 per cent. At the same time, the drawbar horsepower of the vehicle was greater when equipped with this traction device.

New Cincinnati Office for Asphalt Institute

A new field office has been opened by The Asphalt Institute in the Enquirer Building, Cincinnati, Ohio, under the direction of Major W. R. Macatee. Major Macatee brings to his new position a wide experience in highway construction, extending over some 20 years, and will be able to extend the cooperative engineering and research activities of The Asphalt Institute. The new district comprises Ohio, West Virginia, Kentucky, Indiana and southern Michigan.

Effective Snow Removal

The LeTourneau Angledozer, which has been used for years for dirt moving and has proved its sturdiness in service on 70-hp tractors, is also used effectively for snow removal. This special bulldozer angles right or left a maximum of 30 per cent and is easily switched by swinging the brace bar from one side to the other, or it can be used straight across as a bulldozer. Either blade point can be raised a foot above or lowered a foot below the opposite corner by simply screwing two nuts in or out.

The blade is brought close to the tractor at all times, thereby reducing wear and tear on the equipment. The reversible blades have separate replaceable points faced with tungsten carbide hard surfacing to withstand abrasive wear. The Angledozer is built throughout with special alloy steels, is of all electric welded construction, and is built for all sizes of tractors from 35 hp up.

Advanced designs eliminate weight in unwieldy and complicated fittings. It has low upkeep and maintenance costs and delivers great power for heavy lifts or against traveling pressure. Angledozers are made by R. G. LeTourneau, Inc., Peoria, Ill.

A LETOURNEAU ANGLEDOZER CLEARING SNOW FROM ROADS IN THE SIERRA NEVADA MOUNTAINS OF CALIFORNIA

DUST STORMS

like this can be controlled

THOSE dust storms which ravaged the western plains last spring were fearsome things. And nothing could be done to curb them.

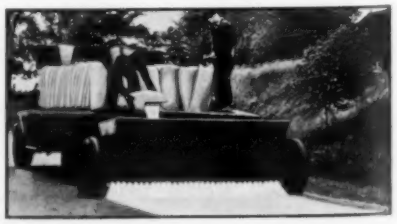
Though more local, the dust clouds raised by passing vehicles and blown from dirt and loose-gravel roads are relatively even more damaging. Not only are they a detriment to lawns, gardens, orchards and roadside crops . . . they are a real menace to health; obscure motorists' vision and invite accidents; smudge up home interiors, ruin furnishings and exasperate housewives. . . . What's more, they carry away tons of valuable material from every stretch of roadway. (One highway engineer estimates the loss at 115 cubic yards per mile annually on roads carrying 400 vehicles a day.)

Such material loss alone is greater than the cost of saving it. And it can be saved—economically—through the use of Calcium Chloride as a dust palliative or road-material "stabilizer." To this add the potential saving in maintenance; the saving in human health and lives, property and crops; and the contribution made to the comfort of both motorists and residents.

The maintenance of secondary or "feeder" traffic arteries devolves almost wholly on county and local highway departments. Controlling dust and thus stabilizing and making dirt and gravel road surfaces smoother, easier riding and longer lasting, is one of the wisest measures road officials can take. It not only makes the ruralite's road-tax dollars go farther but evokes his heartfelt gratitude as well.

(Gravel-and-soil stabilization through the moisture bond afforded by Calcium Chloride is now definitely controllable —through formulæ and techniques developed by soil scientists and highway engineers, aided by extensive researches made by the U. S. Bureau of Public Roads.) For free literature on road-dust control and "soil-stabilized" road surfaces, write to any of the following members of the CALCIUM CHLORIDE ASSOCIATION:

The Dow Chemical Company . . . . . Midland, Michigan
The Columbia Alkali Corporation . . . . . Barberton, Ohio
Michigan Alkali Company . . 60 E. 42nd St., New York City
Solvay Sales Corporation . . . 40 Rector St., New York City



CALCIUM CHLORIDE

FOR STABILIZING ROAD SURFACES

During August we hope you will remember to mention THE AMERICAN CITY

ONE OF THE 4½-CUBIC-YARD STEEL BODIES USED FOR GARBAGE AND RUBBISH COLLECTION IN ST. LOUIS

Watertight Garbage Collection Truck Bodies

The Department of Streets and Sewers, St. Louis, Mo., purchased six special 4½-cubic-yard dump bodies from the Gar Wood Industries, Inc., 7924 Riopelle Street, Detroit, Mich., for handling garbage. The bodies are fabricated of 10-gage high-resistant steel and are made watertight with all seams welded. A sump at the rear end of each body is sufficient to restrict the escape of liquid pressed out of the garbage during collection. As a further precaution against seepage, the tailgate is screwed tight by five wing nuts which hold it against a wide collar welded to the end of the body plates. The tailgate opening is sufficiently large to facilitate dumping, and the tailgate is hinged from the top.

There are three telescoping steel panels forming a sanitary, tight-fitting cover over the body, preventing papers and trash from blowing into the streets, and shutting-in the foul odors that make ordinary garbage trucks so obnoxious. These panels have a cam type locking device which keeps them from sliding about when the body is raised.

With this type of body, the load can be quickly trimmed by partly raising the forward end of the body. This operation packs the garbage into the rear and enables the truck to haul full capacity loads. A Wood cam and roller type hydraulic hoist is installed under the body for dumping.

A New Modern Material Cart

A new modern material cart known as the Ayrgo has recently been brought out by the Pittsburgh-Des Moines Steel Co., Pittsburgh, Pa. This new cart has a liquid volume of 11 cubic feet and is designed to handle a 1,900-pound load. The body is of steel sheets with electric welded joints and is equipped with all-steel wheels, Timken roller bearings, pneumatic tires and full control handles. The tread measures 36 inches, it stands 30 inches high, and the approximate weight is 260 pounds.

The Ayrgo is particularly adapted for use in the contracting field, chemical plants, street departments, golf courses, etc. In the moving of wet concrete one man can handle twice the pay load that was normally handled with the old type of material cart. The design of the body permits the scooping of bulk cement with the cart by running the scooping lip into the material, then bringing the body into an upright position. The new full control handles give the operator full control while dumping the load.

New Pipe Line Coupling Catalog

The Dayton Pipe Coupling Division, The National-Superior Co., Dayton, Ohio, has recently published a new loose-leaf catalog fully illustrating and describing Dayton plain end couplings and fittings. Over 30 years of service in the gas industry makes it unnecessary for this organization to introduce Dayton pipe line requirements in that field. They are also well known in the water-works field for the joining of plain end cast iron and steel pipe.

The new catalog contains large-scale illustrations of each type of coupling, with complete dimensions and a description of the service for which it is particularly intended and the materials included in its construction.

A Leveler-Grader for Black Top, Macadam and Gravel Roads

The Heltzel leveler-grader, which is made in two sections and works automatically in either direction, is specially designed for pulling behind a truck or tractor to level off dirt roads, gravel and macadam highways and black top. It consists of a steel frame 8, 9 or 10 feet wide with runners 20 feet long to insure a smooth surface. It cuts down bumps, fills in the ruts, and carries the material to either side where needed. There is a strike-off gate at either end, the one at the front being raised and the one at the rear pushed down to complete the operation of the V-grader angles, which carry the material back and forth across the 20-foot lengths of the leveler, depositing it in the low spots and cutting off the high spots. Each diagonal angle has a gate which may be opened or closed, depending upon the direction in which the leveler-grader is being pulled. These gates make it unnecessary to turn the machine around.

There are danger flag sockets on all four corners and eyes for attaching the cable to the tractor or truck in all four corners. The Heltzel leveler-grader is described in Bulletin Q-7 which may be secured from the Heltzel Steel Form & Iron Co., Warren, Ohio.

New Patch Roller Is Versatile Unit

The new Galion portable patch roller, recently announced by the Galion Iron Works & Manufacturing Co., Galion, Ohio, is a versatile unit suitable for use in rolling all kinds of patch material, for compacting loose material, rolling drives and similar work. Weighing 8,600 pounds, it is claimed to perform the same service as the conventional 5- or 7-ton tandem rollers.

In its design, full consideration has been given to the convenience of the operator. Steering is accomplished by means of a large automotive-type steering wheel. Forward and reverse motion is controlled by a single conveniently located lever. Gear shift and hand brake levers, motor throttle and control rod for sprinkler valve are all within easy reach of the operator. The motor-oil gage is mounted on the motor housing, fully visible to the operator.

The motor, transmission and compression roll are mounted in a sub-frame hinged at the back to the main frame by a large cross-shaft mounted in bronze bushings and supported at the front by a yoke which is attached to the hydraulic ram for raising and lowering the sub-frame.

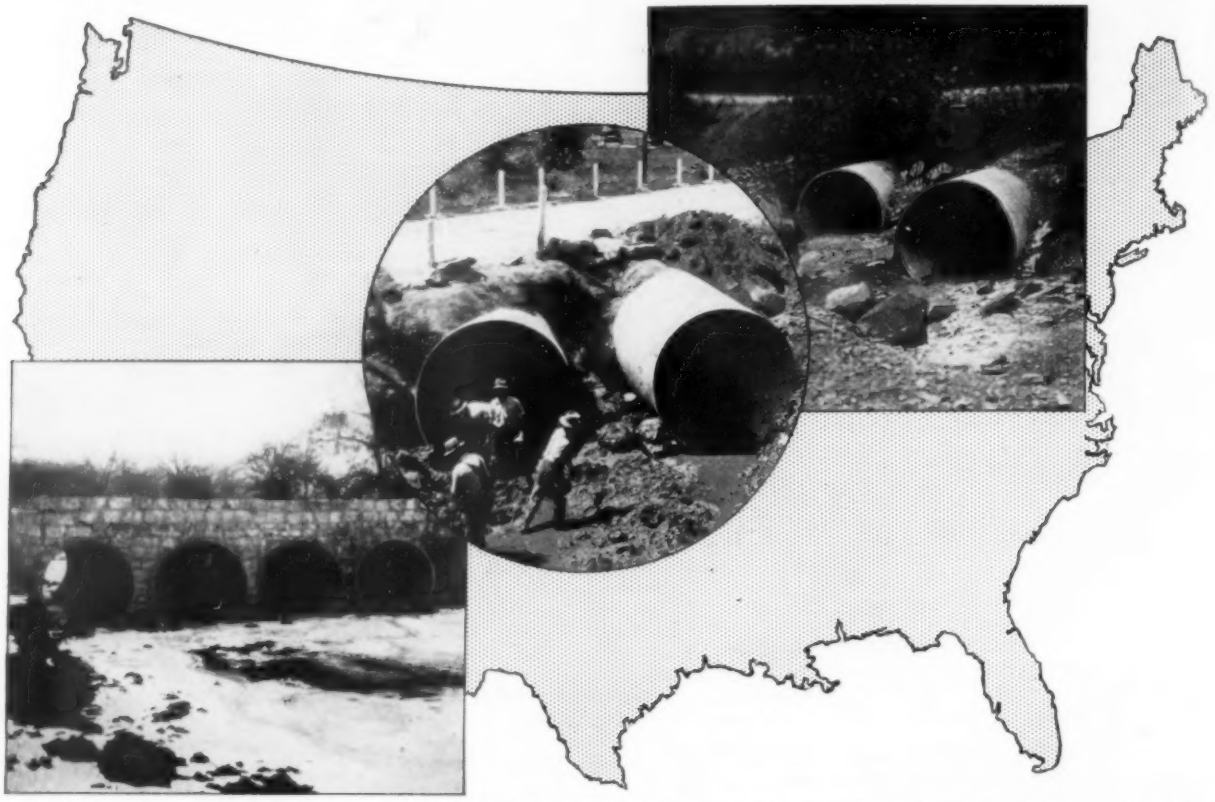
The power plant consists of a high-efficiency four-cylinder motor equipped with air cleaner, magneto with impulse starter, governor and fan. The transmission is fully enclosed and operates on friction-reducing bearings in an oil bath. Fuel consumption for normal rolling conditions is one gallon per hour.

A water tank and valve and sprinkler pipe are provided for keeping the surface of the compression roll wet when rolling material which has a tendency to pick up.

Another feature of this unit is its portability. It can be attached to a truck quickly, the roll raised off the ground by means of the hydraulic lift, and can be transported from one place to another at truck speed.

THE GALION PORTABLE PATCH ROLLER

GOHI A NATIONAL INSTITUTION



FROM the Atlantic to the Pacific, from the Great Lakes to the Gulf, wherever highways carry their ceaseless flow of traffic, GOHI Corrugated Pipe Culverts are successfully and permanently solving drainage problems. More often than not they outlast the roads under which they are laid.

Such unfailing performance is the commonplace with drainage structures made of GOHI Corrugated Pipe—the most vital part of enduring highway construction. Like our American Highways, GOHI Corrugated Pipe Culverts are accepted as a National Institution.

GENUINE OPEN HEARTH IRON GOHI PURE IRON - COPPER ALLOY

Meets copper-bearing pure iron requirements in all accepted specifications for corrugated metal culverts.

Denver Steel & Iron Works Co.	Denver, Colo.
St. Paul Corrugating Co.	St. Paul, Minn.
The Newport Culvert Co.	Newport, Ky.
New England Bolt Co.	Everett, Mass.
Tennison Brothers	Texarkana, Ark.
Central Culvert Co.	Ottumwa, Iowa
Capital City Culvert Co.	Madison, Wis.
F. Yeager Bridge & Culvert Works	Port Huron, Mich.
Bancroft & Martin Rolling Mills Co.	S. Portland, Maine

GOHI

PRONOUNCED "GO-HIGH" CORRUGATED PIPE

GOHI CULVERT MANUFACTURERS, INC., . . . NEWPORT, KY.

PHOTOGRAPH SHOWING PATENTED "END PROTECTION" FEATURE ON GOODRICH FIRE HOSE

Improved Fire Hose

Several important improvements have been incorporated in the design and manufacture of municipal fire hose by the B. F. Goodrich Co., Akron, Ohio, which it is claimed prolong the hose life and increase its efficiency.

One of these new improvements is "end protection," a patented construction feature which provides at the end of the hose where the coupling is attached, and extending back about 15 inches, a special rubber in which is imbedded a network of small, hard twisted cords. This insures added protection at the spot where injury and failure are most common. Other features include the Hydroseal process by which every strand of the jacket down to the rubber can be saturated with a powerful anti-mildew, moisture-resisting treatment; a weaving device that automatically holds every strand at the same tension, guaranteeing a uniform, tight-woven covering; the Flat Cure process which makes possible a collapsible hose which folds naturally into place when rolled, without placing strain or tension on the rubber. Flat Cure hose becomes perfectly round under 5 pounds pressure and carries the same amount of water as other types, and this feature lengthens the life of the fire hose by 20 to 50 per cent.

Kenyon Joins Meter Staff

The Pittsburgh Equitable Meter Co., Pittsburgh, Pa., has announced that S. C. Kenyon has joined its organization in a sales capacity. He received his education at the Case School of Applied Science, specializing in mechanical engineering, and has had 12 years' experience in sales work. Mr. Kenyon will represent both the Pittsburgh Equitable Meter Co. and its subsidiary, the Merco Nordstrom Valve Co. He will travel the state of Ohio, operating from the Pittsburgh District Office, and will make his home in Columbus, Ohio.

Swope Represents Kennedy at Beaumont, Texas

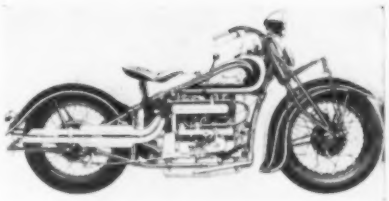
The Kennedy Valve Mfg. Co., Elmira, N. Y., has announced the appointment of Thomas C. Swope as its Texas and Louisiana representative, with headquarters at 863 Fifth Street, Beaumont, Texas. Mr. Swope will handle the sale of Kennedy bronze and iron body gate, globe, angle and check valves, cast iron flanged pipe fittings and flanges, and malleable iron and bronze screwed pipe fittings for oil wells, refineries, pipe lines, industrial plants and buildings, water gates for municipal water-supply and sewage-disposal systems and fire hydrants.

Dr. C. R. Payne Joins Atlas Mineral Products Co.

The Atlas Mineral Products Co., Mertztown, Pa., has announced that Dr. C. R. Payne joined its technical and sales staff on June 1. For the past few years, Dr. Payne has been on the research staff of the Mellon Institute of Industrial Research. He will devote his time to the further development of novel plastic sulphur compounds or cements, and his services and technical advice will be available to engineers and water-works operators desiring information relative to pipe jointing materials.

New 4-Cylinder Motorcycle

A new and improved 4-cylinder motorcycle to be known as Model 436 has recently been brought out by the Indian Motocycle Co., Springfield, Mass. Its appearance, while conservative, conveys an immediate idea of speed, sturdiness and unlimited power and is in keeping with the aero-dynamic design of the present-day automotive trend. This new machine has many new features, including heavy-duty cylinders with extra-large cooling fins to insure a cool-running motor; high-compression combustion chambers; high-lift cam-shaft, giving faster cam action on both the intake and exhaust valves; enlarged porcelain-finished exhaust manifold with twin, free action mufflers; enlarged intake manifold made of aluminum and with smooth unrestricted passages; needle bearings in all the rocker arms to insure smooth operation; and a special carburetor.

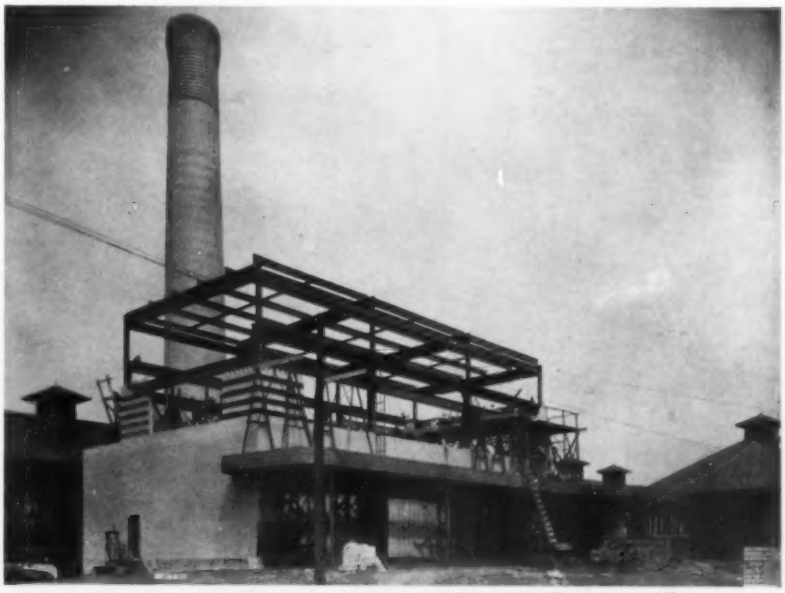


THE NEW INDIAN 4

The long, low, easy-riding frame, a double tubular-steel welded construction, a triple-stem fork and leaf type spring suspension of the front wheel, assure stability, a lowered center of balance, a compact position of all controls; the new quiet, twin chrome-plated muffler; the oversize braking center, and a new easy-acting centrifugal action clutch, all combine to make this new Indian 4 a comfortable and safe machine.

In the making of this machine strict attention has been paid even to the smallest details. This new 4 has fast acceleration and can readily be brought to a full stop. The larger two-wheel brakes have been successfully tried out at speeds ranging as high as 80 miles per hour. The Indian triple-stem fork is used on this machine. The motor improvements make it possible to operate it at a very fast rate of speed for any length of time without danger to the motor and without loss of power. The unit weighs slightly less than the older models.

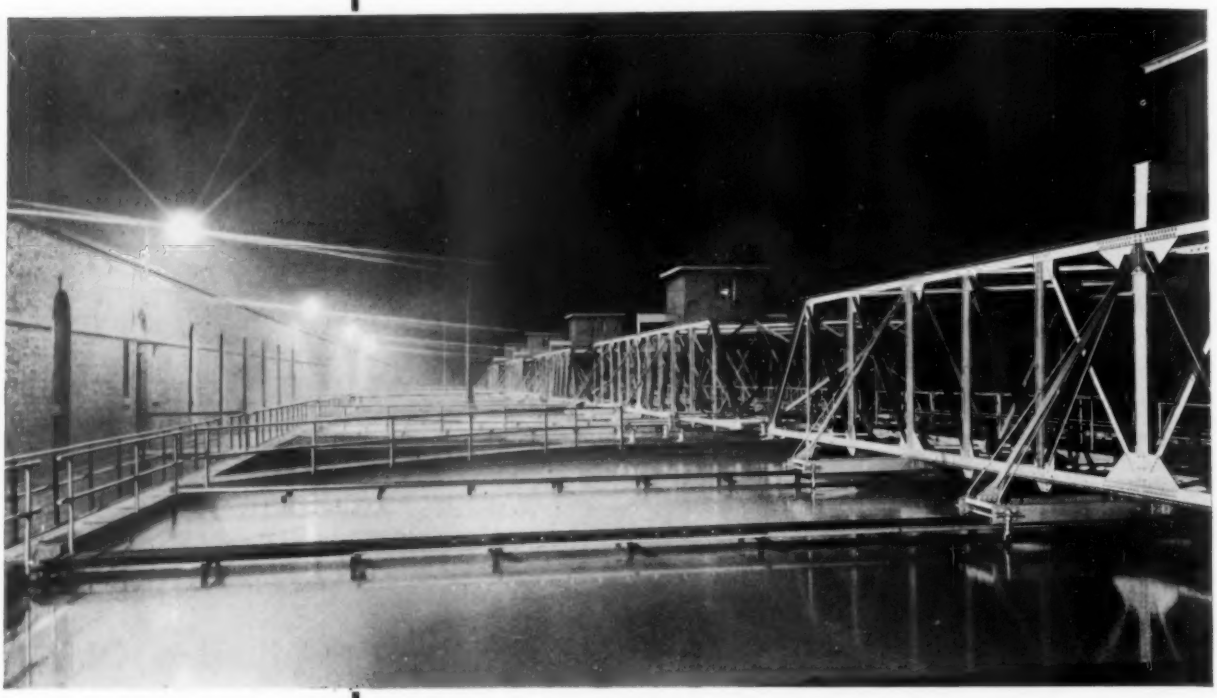
New Decarie Plant at Columbus, Ohio



NEW INCINERATING PLANT UNDER CONSTRUCTION AT COLUMBUS, OHIO

This plant is nearing completion and will be placed in operation during September of this year. It is being constructed by the Decarie Incinerator Corporation of New York City, and will have a capacity of 150 tons of mixed garbage and rubbish per 24 hours

HOLOPHANE *brings* DAYTIME EFFICIENCY TO NIGHT-TIME OPERATIONS AT DISPOSAL PLANTS . . .



(Above): Holophane units illuminate the Municipal Sewage Disposal Plant at Milwaukee, Wisconsin. The units are mounted on 100-ft. centers, using 500-w. lamps.

The night shift works with daylight efficiency at this Sedimentation Tank. Holophane glareless, uniform illumination dispels shadows. The geared-for-action scene impresses visiting taxpayers.

Holophane engineers design lighting equipment to meet the mechanical as well as illuminating problems for ALL operations in a sewage disposal plant—Roadway, Power House, Boiler House, Dryer House, Sludge Storage Building, Gallery and Aeration Tanks.

**** Our engineering service is qualified to give you sound counsel and practical recommendations on any lighting problem***

ILLUMINATION Consult Holophane Engineering Service SINCE 1898

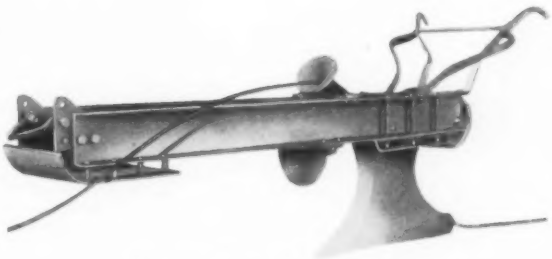
HOLOPHANE
COMPANY, INC.
342 MADISON AVE., NEW YORK
Works: Newark, Ohio

Mention THE AMERICAN CITY—it helps.

A Cable-Laying Plow for Parkways

A plow which has been used for years to lay cable economically for parkway and rural electrification is made by the Philadelphia Electrical & Manufacturing Co., 1222-36 North 31st Street, Philadelphia, Pa. This Pemco cable-laying plow eliminates expensive trenching and backfilling and lays cable up to 1¼-inch at a depth of from 15 to 20 inches without danger of damage to the cable. Two cables up to 1-inch diameter can be laid in a single operation.

Four men and a truck with a winch handle the plow, or the plow may be pulled by either a truck winch, a portable winch or a tractor. The sturdy construction of the plow is demonstrated by the fact that one utility company laid cable to a depth of 18 inches in shale rock and across macadam drives with one of these plows.



THE PERCO CABLE-LAYING PLOW

Lighting Milwaukee Sewage

The sedimentation tanks of the Milwaukee sewage treatment plant have recently been lighted. Sewage stands 15 feet deep in them, and a misstep would mean an unpleasant bath. There are 21 of these outdoor tanks—the smallest is 42 feet square—with walkways along the sides and, at frequent intervals, across to the sludge-removal mechanisms. A system of directional or selective lighting was chosen by the Sewerage Commission of the city of Milwaukee, consisting of 10 500-watt units spaced 100 feet apart, mounting height 18 feet. The illumination intensity is 1.5 foot-candles, higher than in many business districts and 30 times moonlight. The lights are equipped with Holophane refractors which bring into sharper visibility the walkways and the sampling troughs. Darwin W. Townsend, Consulting Engineer of the Commission, says: "The lighting is used as a means of safeguarding the plant operators, who are on duty throughout the night and the day, it being necessary for them at frequent stated intervals to collect samples of the effluent being discharged from each of the several effluent troughs in the sedimentation tanks, and also at frequent intervals to determine the depth of the sludge blanket in the several tanks. . . . We believe that the system of lighting which we use is quite satisfactory for this purpose."

Fighting Grass Fires with Tractors

The city of Los Angeles, Calif., has a real problem with grass fires in its suburban territory, much of which is deep mountainside and where there is no water pipe for fire fighting. For several years the city has owned two Model 80 Cletracs on which they carry fire-fighting equipment for quick trips to a danger area. Recently they have added a new Model 40 diesel Cletrac and Gar Wood roadbuilder. The photograph below, by Orville Logan Snyder, shows this equipment smoothing some of the roads in the fire danger area. Captain Gaylord L. Watson is shown directing two men how to repair the damage in a fire road caused by a slight earthquake the night before.

The services in which tractors are now employed by cities seem almost unlimited.

PART OF THE AKRON FLEET OF GALION PATROL GRADERS EQUIPPED WITH B. F. GOODRICH ZERO PRESSURE TIRES

Low-Pressure Tires on City Equipment

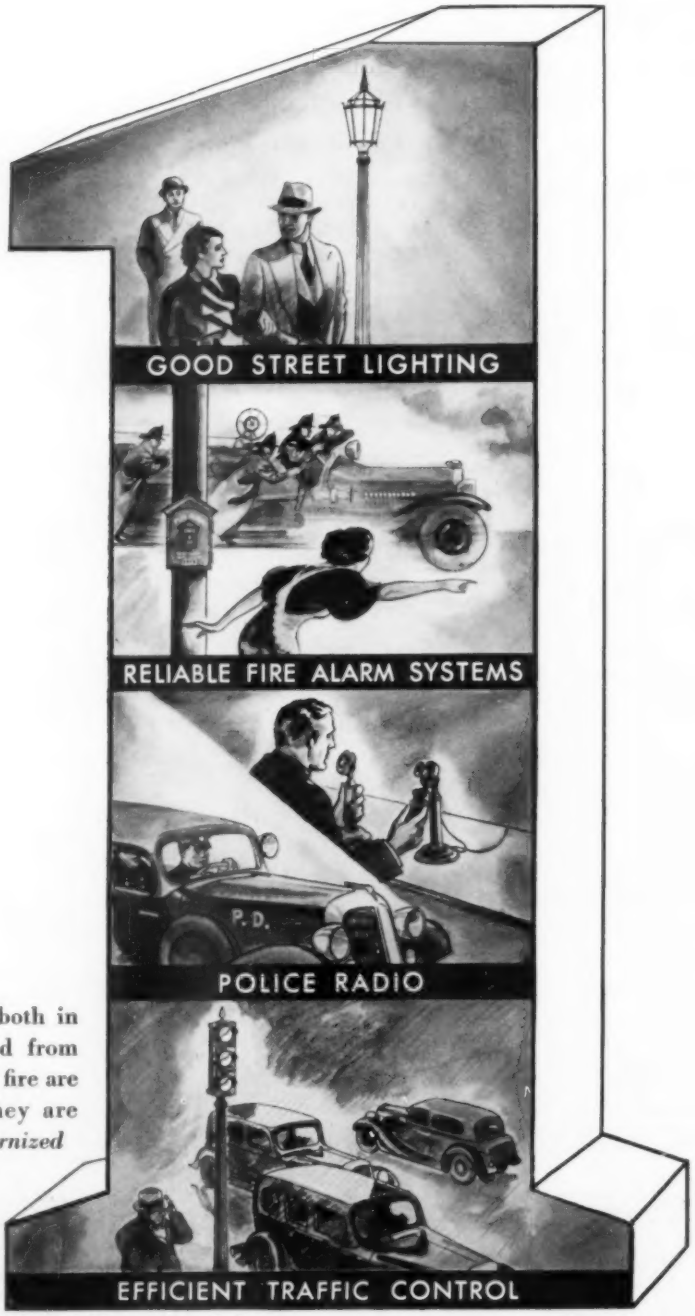
Thomas P. O'Toole, Superintendent, Street Repair Division, city of Akron, Ohio, sends THE AMERICAN CITY the following letter regarding the equipment shown in the accompanying illustration of patrol graders.

"I cannot say too much in praise of the B. F. Goodrich Zero Pressure tire. It is one of the best tires on the market, and the only one which I have ever used with success on snow. I have had the present set of Zero Pressure tires on the rear of my graders and solids on front for four years. I am today (June 14, 1935) placing an order for three new sets. I find that the solids in front are better due to the blades sliding when ditching gutters.

"I have seven Galion Patrol graders at the present time, and although I have used several different types of graders, I consider this type the best I have ever used."

REPAIRING A FIRE TRAIL IN THE SUBURBAN SECTION OF LOS ANGELES

The public safety...FIRST!



THE tremendous losses both in life and property suffered from traffic accidents, crime and fire are arousing the public. They are demanding effective, *modernized* protection...electrical protection. Good street lighting, for example. It combats crime...accidents. Boosts business... Reliable and adequate fire alarm equipment...Police radio to speed up the long arm of the law...Efficient traffic control to reduce costly and dangerous traffic congestion...The logical source for this equipment is Graybar. Graybar offers not only a complete line of equipment, but also expert and experienced advice on how to use it most effectively. Write for information.

Graybar

OFFICES IN 77 PRINCIPAL CITIES
EXECUTIVE OFFICES: GRAYBAR BLDG., N.Y.

Distributed and guaranteed by Graybar Electric Company

Do you mention THE AMERICAN CITY? Please do.

THE MATHIESON SWIMMING POOL FOOTBATH

Athlete's Foot Prevention at Public Bathing Places

The spread of ringworm infection (athlete's foot) is a more acute problem every year. Transmitted on the floors of shower rooms and locker rooms, these painful skin infections often attack the very people who prize health most highly. Once contracted, athlete's foot is very difficult to cure. That is why medical authorities stress prevention. The most practical preventive, they agree, is the use of footbaths of hypochlorite solution by all who walk barefoot in shower and locker rooms.

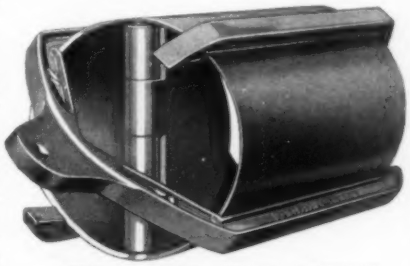
This hypochlorite footbath has been especially designed by Mathieson engineers to add to the effectiveness with which hypochlorite solutions protect from athlete's foot—it holds the most economical amount of solution necessary to insure protection. It has anti-splash and anti-slip features found in no other footbath. People will at once recognize its usefulness as an attractive, well-designed footbath and will appreciate the fact that you have installed it for their protection.

The size of this footbath is 30 x 30 inches; its height, 4 inches; weight 39 pounds; capacity, 6 gallons (depth of solution, 2 inches); its composition, green, flexible rubber, molded in one piece, with anti-slip bottom tread on inside, anti-slip suction groove on the under surface, and rounded, anti-splash side walls. Nothing to break, nothing to corrode, nothing to leak — easy to empty, easy to refill and keep clean. Further details, prices, etc., may be secured from The Mathieson Alkali Works (Inc.), 60 East 42nd Street, New York.

Combination Root and Sand Bucket for Cleaning Sewers

Root and sand buckets that are designed on the principle of check valves so that they allow all material cut loose by the circular cutting edges to freely enter the bucket on the inward journey, but on the return trip the material forces the gates shut, are made by the Turbine Sewer Machine Co., 5210 West State Street, Milwaukee, Wis. These combination root and sand buckets are made in 6-, 8-, 10-, 12-, 15- and 18-inch sizes, and the positive design of the gates always insures a loaded bucket when cleaning a sewer line. The runners on the buckets are firmly welded to the cylinder and are so constructed as to make it impossible to "hang" the bucket on bad joints in the sewer.

A complete combination root and sand bucket system includes: two windlasses specially made for sewer work; 1,000 feet of $\frac{3}{8}$-inch 6 x 19 special waterproofed plough steel cable, 500 feet on each windlass; 500 feet of 3/16-inch leader cable on a drum which is attached to the last sewer rod, making it



THE TURBINE SEWER MACHINE CO.'S ROOT AND SAND BUCKET

easy to get the cables through the sewer line; two Turbine sewer braces with pulley blocks; and the necessary toolbox and tools.

Stainless Steel Traffic Markers

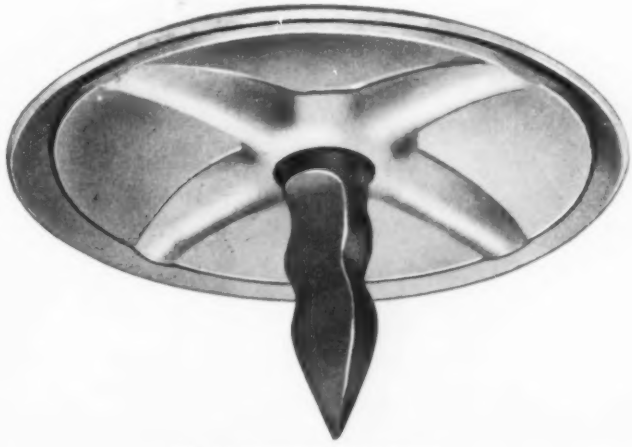
Permanent traffic markers made of stainless steel, to create traffic lines at safety zones, traffic lanes, street-car swings, fire hydrants, pedestrian crossings and bad curves, are made by Littleford Bros., 500 East Pearl Street, Cincinnati, Ohio. The Traf-O-Dot is composed of four parts which when assembled form a permanent unit.

The surface disc will not lose its satiny sheen and will not tarnish. It is made $3\frac{5}{8}$ inches in diameter, with a smaller size $2\frac{1}{2}$ inches diameter, and is held in place with a corrugated spike driven through the hole in the surface disc and the ribbed under-disc. The ribs on the underneath disc serve three purposes: first, to strengthen and support the entire button; second, to prevent slipping—no amount of traffic can force this button to move after once being set in place; third, it prevents the button from burying itself in bituminous pavements.

Emergency Experts in Protecting Water Supplies

When trouble breaks out at a waterworks plant and emergency chlorination is necessary, the plant operator's first thought is Wallace & Tiernan. During the past summer this Newark, N. J., company delivered chlorinators to McCook, Nebr., by airplane through the cooperation of the Army Air Service and also assisted in the prevention of the spread of water-borne diseases in central New York State after the disastrous floods in that district, by delivering chlorinators by automobile from various points. Add to these the earlier installations of chlorinators by a W & T man who mushed 40 miles on foot through muskeag and worked during the New England floods, after the Florida hurricane, the Mississippi floods, the California earthquakes and the washouts of the Pacific Northwest, and you have the story of the emergency service of this organization.

Those who were engaged in waterworks operation during the World War will well remember emergency services of this organization to various camps, cantonments, and army posts when troubles arose and delays might have meant epidemics among civilian employees not protected with innoculation against water-borne diseases.



THE LITTLEFORD TRAF-O-DOT

"uniformly distributed darkness"

A great man once used this phrase in describing poor street lighting.

Of course, any kind of street lighting is better than none at all. However, street lighting of the "any kind" variety has proved the most costly in lives lost, in economic loss and in actual cost to the city.

For instance, in a survey of 45 cities it was discovered that the night fatality rate on heavy traffic streets with Grade A street lighting was 7 times higher than the day fatality rate; with Grade B lighting 10 times higher; with Grade C lighting 14 times higher; with Grade D lighting 15 times higher.

69% of the above fatalities were caused by pedestrians crossing the street, and 66% of the pedestrian accidents were at night.

From the standpoint of both pedestrians and motorists adequate street lighting is one of the most important safety factors a community can provide. And when it is considered that the average cost of an accident is several times the cost of the illumination that would have prevented it, there comes better understanding of the fact that a community pays for good street lighting *whether it gets it or not!*

Westinghouse, largest maker of lighting equipment, provides a complete line of street lighting equipment unsurpassed in durability and efficiency. Westinghouse also maintains an advisory staff of skilled street lighting engineers who are always at your service. For complete details write, Westinghouse Electric & Mfg. Co., Lighting Division, Edgewater Park, Cleveland, Ohio.

WHEN YOU THINK OF *Lighting* THINK OF

Westinghouse

Outdoor Lighting

A Section of *The American City*
Devoted to the Lighting of Streets, Highways, Bridges, Airports, Athletic Fields and Parks, and the Floodlighting of Public Buildings

Floodlighting for City Beauty

By L. H. LINGEMANN
Municipal Representative, Duquesne Light Co., Pittsburgh, Pa.

IN floodlighting public buildings, there is no need to impress a trade name on the public mind and no definite product to sell. Therefore, the use of floodlighting on buildings of this character must generally be employed for its decorative advantages, which perform an advertising function through the publicity gained by the community in which the building is located.

ALLEGHENY COUNTY COURT HOUSE, PITTSBURGH, PA., AT NIGHT
Showing tower floodlighting and high-intensity lighting in recessed sections

The recent floodlighting installation at the Allegheny County Court House, Pittsburgh, brings into view at night what has often been described as the finest example of Romanesque architecture in this country.

During the last several years the present Board of County Commissioners has pursued a plan of rehabilitation to bring this structure up to present-day standards. Following the creation of a high standard of appearance in the interior, the outside was cleaned for the first time since its erection in 1888.

After considerable investigation and study, it was decided to floodlight a portion of the Grant Street elevation and the entire tower. The lower floors of the Grant Street elevation are lighted by four ornamental standards, each with two lantern-type floodlights. Two taller standards light the lower front face of the tower. Each of the two recessed sections flanking the lower base is provided with four projector-type floodlights using 1,000-watt lamps.

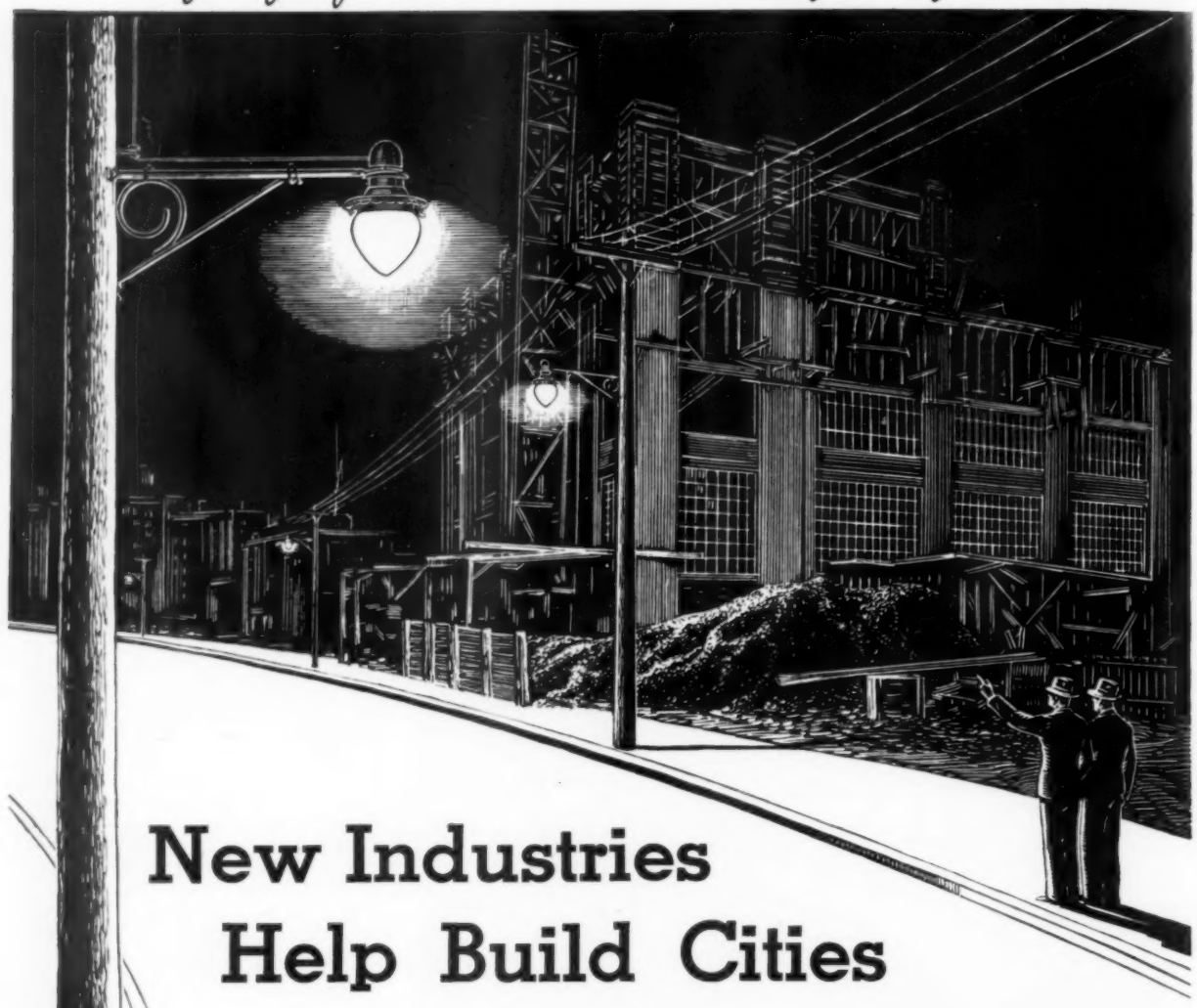
Each of the three other sides of the tower and of the lower belfry is illuminated by six projector-type floodlights. The upper belfry on all four sides is provided with trough enclosed projector-type units. On each of the four turret tower roofs one 500-watt projector is used to floodlight the tower roof bevels.

The ornamental standards along the Grant Street elevation were manufactured by the Union Metal Manufacturing Co. and furnished through Graybar Electric Co. The lanterns on these standards are General Electric equipment. The remaining floodlighting equipment for the recessed portions and the tower was furnished by the Pittsburgh Reflector Co., and the installation was made by Hess & Barton, Pittsburgh.

I. E. S. Papers at Cincinnati Convention

IN two papers to be presented at the 29th Convention of the Illuminating Engineering Society at Cincinnati, September 3-6, Kirk M. Reid and H. J. Chanon, of General Electric Co., find that glare wastes as much as 50 per cent of the illumination; O. P. Cleaver, of Westinghouse Lamp Co., discusses the present and future place of high-intensity mercury and sodium vapor lamps.

Voters judge your administration by the good it does



New Industries Help Build Cities

Bright Streets Bring Business Men to Your City

What type of "store front" does your city present? Does it attract new business and industries? The "front" of a town is just as important as the front of a store in attracting new customers. And, just as with a store, new customers build the town and increase its prosperity. New industries bring more building, more homes, more retail customers — and more tax revenue.

Bright, clean streets are important. They create an important first impression on business men looking for new locations. They influence the direction and extent of the town's growth.

A record of increased population, increased business, and new industries is important to your administration. It is an indication of progressiveness. Bring your street lighting up-to-date — in the business section, in residential sections, and in industrial sections. General Electric Company, Schenectady, New York.

You pay for good street lighting whether you have it or not . . . with inadequate lighting, you pay in accidents, crime, and deaths.

500-126

GENERAL ELECTRIC

Why not remember to mention THE AMERICAN CITY?

Replacing Obsolete Lamps Reduces Cost

"THERE has been little need for extension to the street-lighting system during 1934; although the practice has been continued of replacing obsolete lamps with modern units. The economic importance of this policy is reflected in the annual operating cost of $201,828.44, which shows a reduction over 1933 of $5,391.66. . . . It is interesting to note that the net debt per street light works out to the strikingly low figure of $70.09." This report by the Manager of the City of Winnipeg Hydro Electric System might be thought by officials in United States cities where lighting expenditures are being held to minimum, to apply in this country too. But does it? Reports from a number of cities in the last three months, some of them listed below, indicate considerable activity. Some of these twenty-five projects may be under way or completed, many quite sizable in proportion to the population.

Wausau, Wis., electrical department changing ornamental standards from five-light clusters to one-light National Juniors. The Wisconsin Public Service Corporation has installed 175,000 watts of floodlighting for a baseball field.

Burkburnett, Texas, has purchased two 500-hp engines, and will install complete street lighting

Billings, Mont., 146 new ornamental lights.

Harrisonville, Mo., installs modern lighting units on white-way poles.

Norristown, Pa., 10 new lights on ¾-mile.

Monett, Mo., 22 additional street lamps. Present lighting of the football field will be extended to include the baseball field.

Rockdale, Texas, will add a few street lamps and floodlight the athletic field.

Heber, Utah, light and power plant will install white way lighting on Main Street.

Barron, Wis., 1½ miles of new white way.

Olyphant, Pa., extends street-lighting system a half-mile.

Middlebury, Vt., extends street-lighting system to include Daniel-Chipman Park.

Slater, Mo., purchases twelve lighting standards complete and electric fountain equipment.

Bellevue, Iowa, light and water plant changes 35 five-light standards to one-light series.

Batavia, N. Y., plans to light 5 miles of its main streets.

Idaho Falls, Idaho, changes 39 five-light clusters to one 300-watt.

Belzoni, Miss., moving all poles and wires off streets and into alleys, and purchasing new poles and line equipment.

Lubec, Maine, Water and Electric Department installs two miles of street lighting.

Garden City, Kans., changes white way from multiple to series.

Paullina, Iowa, considers rebuilding residential street-lighting system.

Poplar Bluff, Mo., municipal light plant installs 200 additional white way standards.

Opelousas, La., electric light and water-works plant will install 74 standards, and recently completed installation of 150,000 watts of floodlighting for the baseball field.

Anaheim, Calif., has painted posts with aluminum paint.

Orrville, Ohio, Municipal Utilities installs two additional ornamental standards and changes eight park lights to series.

Denton, Texas, municipal plant installs 40 standards.

Brady, Texas, added 15 standards and floodlights football field.

Lighting a Suburb

HOW do you judge a street-lighting system? In view of the assertions of certain prominent illuminating engineers that there are very few efficient and good-looking systems in the entire country, the question might be put more baldly: Are you able to judge a street-lighting system?

The two pictures on this page provide a test that should be more interesting, to say nothing of instructive, than supplying the fourth line of a limerick or telling in not more than 100 words why Flux is your favorite shoe polish.

Here is a parkway running through an eastern city, as it looks in the daytime and, according to the best offices of the camera, as it looks at night. State in as many words as you need whether or not, in your opinion, this is a good stretch of lighting. Be as positive as you please—boost or knock or both—your name or city will not be published, but your remarks should be interesting and useful to others, just as theirs will be to you. Whether you are a Mayor, a City Manager, Councilman, City Engineer, Plant Manager, Manufacturer, or a mere Citizen, your point of view is invited. Let's have it, as the sales letters say, Now.

The principal items in judging street lighting are costs, appearance, illumination and depreciation. You may or may not be in a position to pass on the cost and depreciation factors of the system here shown. If not, concentrate on appearance and illumination. You see how the system looks in the daytime and in the night-time. What are your suggestions on lighting a suburb?

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★ *for* **QUIET SLEEP**...Our 32 stories of fresh air and sunshine assure you quiet rest. Simmons beds assure you comfort.

★ *for* **DINING**...3 fine restaurants to choose from—the Coffee Shop and Cafeteria, the Tavern Grill and Bar, and the Main Dining Room, with dancing.

BREAKFAST . . . *from* 40c
LUNCHEON . . . *from* 65c
DINNER . . . . *from* 85c

Hotel LINCOLN

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SINGLE ROOM $2.50 UP

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LEONARD HICKS, *Managing Director*

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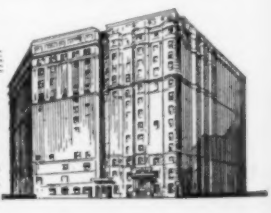
CLIFFORD R. TAYLOR
Managing Director

HOTEL TULLER



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SEPTEMBER, 1935

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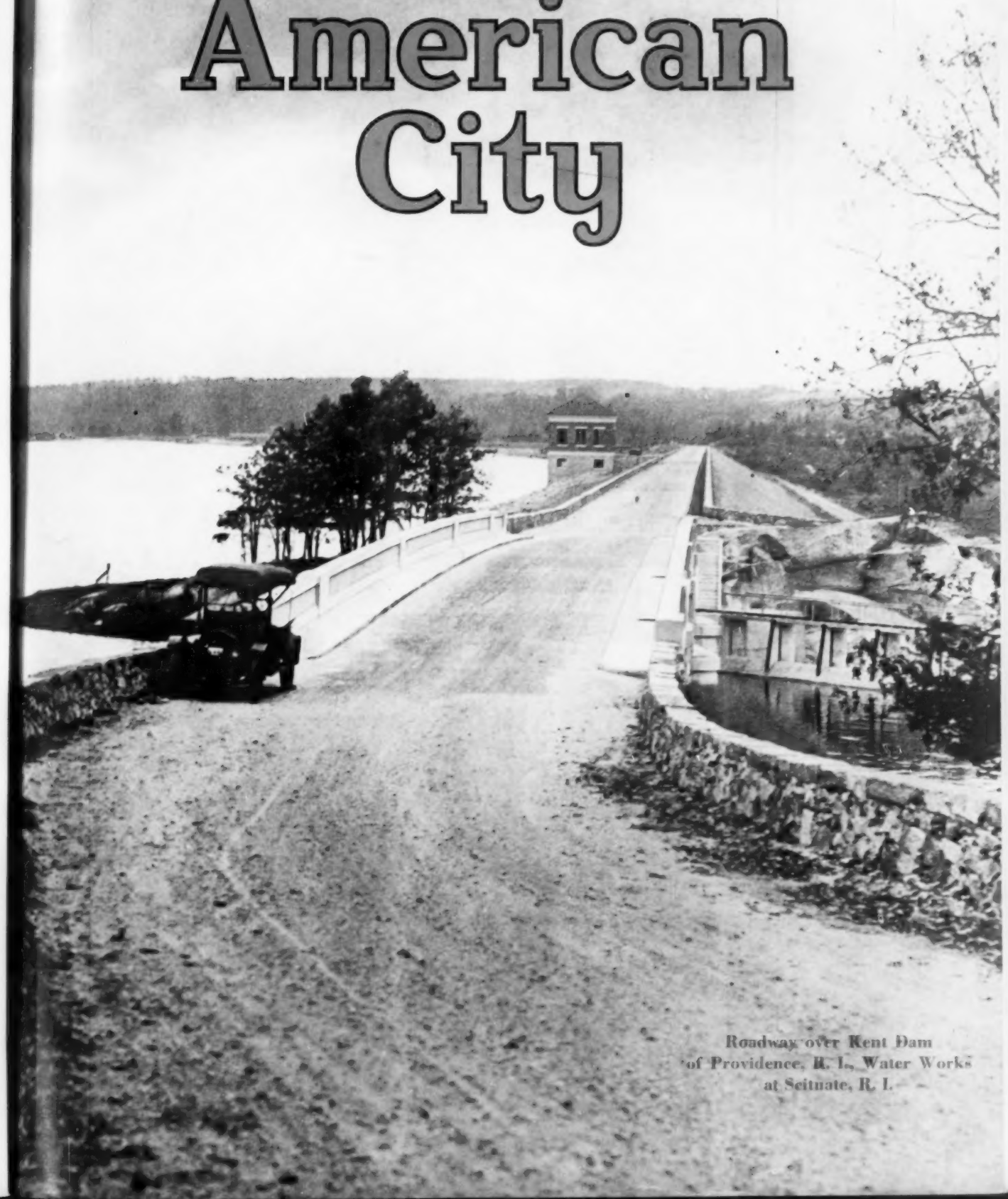
The American City



Roadway over Kent Dam
of Providence, R. I., Water Works
at Scituate, R. I.